ASL

Australian Society
for Limnology Inc.

NEWSLETTER

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Volume 39 #1
March 2001

Registered by Australia Post
Print Post Publication No.PP381667/00125

ISSN 1037-2512

AUSTRALIAN SOCIETY FOR LIMNOLOGY INC.

The Australian Society for Limnology (ASL) is an Australian-based scientific society whose focus is the study and management of inland waters. The ASL was established in 1961, and has a current membership of over 600 researchers, managers, engineers, teachers and tertiary level students from all states and territories. Members have a strong professional interest in inland aquatic issues, including the maintenance of biodiversity, the maintenance and/or restoration of water quality, and the wise use of aquatic resources. The Society also has a strong interest in fostering the scientific and intellectual development of tertiary students.

The Society includes members working in government agencies, tertiary institutions and many industries related to aquatic resources. Through their daily activities, members have contact with local communities and are in a sound position to interpret and advise on inland water issues. The Society has a substantial knowledge base, and has assumed a responsibility to ensure that this is available to those who manage inland waters.

Accordingly, the charter of the ASL is to further our understanding of Australia's inland waters and to promote their wise use and sustainable management. In this manner we will contribute to the continued existence of this valued resource and the maintenance and enhancement of the quality of life for all Australians.

The ASL regularly produces a newsletter with notes on limnological activities, articles of interest, book reviews and announcements of upcoming events likely to be of interest to Members.

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Membership Information and a list of the Regional Executive Officers can be found at the back of this Newsletter.

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Material for publication in the **Volume 39 #2 Issue** of the Newsletter should be sent to the Editor (see back pages) by **1/6/2001** **Volume 39 #3 Issue by 31/8/2001**

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All articles should be forwarded, if possible, as unformatted text on a disk or via email.

ASL Home Page - http://www.asl.org.au/
WEB MASTER – SIMON JOSEY

This Newsletter is printed by Border Multi Print, Wodonga, packaged by Kalianna Pty Ltd and distributed by Australia Post.

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EDITORIAL

This issue is filled with a decent selection of goss from around the traps of limnological organisations, some jobs, another policy thing from John Neville, conference announcements and a whole lot more, sorry no steak knives.

The **big thing** is that you can now decide, from the next issue on, if you want to ditch getting a hardcopy of this wonderful mag and just get a copy via email. There are now 3 ways to get access to an electronic version of the newsletter.

1. Fill out the form on page 66 and post it or fax it to Margaret Hart,
2. Email me or Simon Josey (the ASL Web Master), or
3. Go to the new form that can be found at the web site (http://www.asl.org.au/).

The up side of getting the newsletter by email is that:

1. We will save more trees and produce less CO2;
2. The money saved will be spent on better things by ASL; and
3. You will receive less stuff in your, otherwise crowded, post box..

There is no downside, but do not fret, if you do not want to get a copy of future newsletters by email, you will still get them by post (the default option).

As you can see by the front cover it is time for me to hand over the reins, pass the buck and get some new fresh air into the newsletter. "What's involved", you keenly ask? Only about two days every issue (every three months) and some patience. All the labelling, printing, packaging and posting is done by someone else and that can be people that you choose.

"What's in it for me" you ask?
"Well, fame, fortune, social status and power" I say.
"How do you figure that out" you ask?
"Well", I say, "over 600 people, most of which will not have heard of you before, will know your name and contact details (FAME!), you can leave articles and other stuff out of each issue that is not appropriate reading (POWER!), you get to know all the gossip that is happening in the society before anyone else (SOCIAL STATUS!), you get to decide you is going to keep the books that are reviewed for the newsletter (MORE POWER!), and it looks good on your CV (FORTUNE!). Sorry you can't use each issue as a refereed publication."
"What is the downside", you ask?
"Well, over 600 people, most of which will not have heard of you before, will know your name and contact details" I say.

Any volunteers please contact myself or Jane Chambers.

The Ed.

PRESIDENT'S REPORT

President's report

Preparations are well in hand for our next congress in Moama (near Echuca 27 Sept- 1 Oct), thanks to our hard working organising committee. See the info in this newsletter. It promises to be a jam-packed tantalising schedule - mark it in your diaries! Prior to the congress, the Society of Wetland Scientists (Australian Chapter) and Wetland Care Australia are joining us in co-sponsoring the 2nd Australian Wetland Forum. Both SWS and possibly WCA will be having meetings back to back with the ASL congress.

In early February the 28th SIL congress was held in Melbourne. This was an excellent conference (I was impressed by the quality, diversity and topics of papers) and ASL was very visible. ASL sponsored the conference and our logo could be seen on all publications, I gave an official welcome from ASL at the opening ceremony, we had membership brochures, policy documents available and I found considerable interest in our society from international visitors. Thanks to the organisers (and ASL members) Richard Marchant and Ian Campbell for their efforts.

The inaugural Queensland ASL Pub Night took place on Thurs 22 Feb and was a great success, with a talk from Stuart Bunn and a great crowd from all sorts of limnological backgrounds. Thanks Jon Marshall for getting it together - look forward to many more!

As preempted by Ivor last issue, we are very happy to now have Paul McEvoy officially as our SA rep, replacing Kerri Muller. Paul is already showing himself to be valuable, active exec member - Thanks for your contributions Paul.

Margaret Hart has finally got a new computer so we can update and improve our membership and distribution services. We are now able to offer the newsletter in electronic format, if you'd prefer it to the hard copy you receive now. See the form in this newsletter or on our webpage.

Cheers, Jane Chambers
1st March, 2001

GOSSIP

NIWA AUSTRALIA PTY LTD

Many of you will be familiar with NIWA (National Institute of Water and Atmosphere) in New Zealand. NIWA is a large research organisation, which focuses on water and atmospheric sciences. They have recently established NIWA Australia (a totally separate company) in Brisbane. The mission of NIWA Australia is to provide a scientific basis for the sustainable management of atmospheric, marine and freshwater resources. It intends to achieve this through active collaboration with other science-discipline groups on consulting and research projects. In NZ, NIWA has established a reputation for providing timely, impartial and scientifically-defensible advice within their specialist area. It is NIWA Australia's intention to follow this philosophy closely. The founding members are **Ngaire Phillips** (formerly of the QLD EPA), who joins NIWA Australia as Principal Scientist (Aquatic Ecology) and **Kym Seebohm** (formerly of NSW EPA), who joins as Principal Consultant (Natural Resources). **Ngaire** is an aquatic ecologist, while **Kym** has a background in geography, social impact assessment and water resources planning and management. **Jim Cooke** is managing NIWA Australia and has more than 20 years experience in environmental scientist, project manager and business development.

If you would like to learn more about NIWA Australia, call Ngaire on 0404 83 4164 or email her on n.phillips@niwa.com.au.

By **Ngaire Phillips**

MURDOCH UNIVERSITY

All has been particularly quiet on the Western front since the last newsletter – we have seen the end of another academic year and are at the beginning of a new one. It seems that this page is always about conference travel !! The recent SIL Congress kept **Jane Chambers, Jenny Davis** and **Karen Sutcliffe** busy as they headed to Melbourne last month. Back on campus, we were preparing for the onslaught of new students. **Heather Gordon** has begun Honours investigating Manning's n of riverine sedges and rushes of the streams of the southwest and **Leah Delfs** is investigating the feasibility of restoring colour to wetlands on the Swan Coastal Plain and the relationship between colour and eutrophication. **Cho Lamb** also started her Honours looking at the relationships between temperature and metaphyton in nuisance midge development at Lake Joondalup. **Jennifer Hale** (still recovering from the photos in the last edition - thanks Michael) and **Jane Chambers** have just completed a short guide to the unpleasant looking algae deposits and blooms which occur in WA's wetlands and rivers.

From: **Megan McGuire**

CENTRE FOR WATER RESEARCH, UNIVERSITY OF WESTERN AUSTRALIA

Emma Gale, **Barbara Robson**, **David Hamilton**, **Gideon Gal** and **Terrance Chan** have also just returned from SIL. **Alisa Krasnostein** and **Terrance Chan** are currently at the ASLO Conference which is being held in Albuquerque, New Mexico. **Carolyn Oldham** has returned to much warmer weather after spending the past six months on academic study leave at Stockholm University, hosted by Orjan Gustafsson at the Institute for Applied Environmental Research. Whilst on study leave Carolyn strengthened her interest in understanding the transformations, cycling and release of colloidal material from sediments as well as being involved in setting up collaboration between researchers at UWA, Stockholm University, Lulea University of Technology and the University of Lund, with the aim of increasing our understanding of the role of sediments in geochemical cycling in shallow and deep lakes. Other news on the CWR front includes the release of DYRESM (DYnamic REservoir Simulation Model) as freeware in November 2000. For more information on DYRESM and its application visit http://www.cwr.uwa.edu.au/~ttfadmin.

From: **Emma Gale**

NATURAL RESOURCE ASSESSMENTS PTY LTD - CAIRNS

This may very well be the first bit of gossip from Natural Resource Assessments way up here in Cairns. Firstly I'd like to thank the crew at WSL bio-lab for making my stay rather ehhh, memorable! I've swapped those rainy Melbourne days for rainy Cairns days, but the wet should (hopefully) be over soon...NRA has just welcomed onboard doctors **Andrew Butler** and **Alexander Herr**. Andrew has joined us from the UK and has taken on the role of soil scientist and environmental chemist. Alexander has recently completed his post-doc on environmental flows at Charles Sturt University. He's been thrown in the deep end with **Stuart Warboys** and myself on the Mulgrave River Action Plan. Also well underway is the Cairns City Council Waterways Strategy. But its not all strategies and plans. I'm busy getting ready for our regular water and bug monitoring surveys at a number of central and far-north Qld mines. It will be good to get back behind the microscope and put that research into practice.

I'd also like to welcome **Amy Collins** (Admin) and **Ben Newson** (IT) to the growing band at NRA. Thanks also to **Shannon Weatherall** (James Cook University) who has put the in hard yards as our work experience student.

regards,

Marc Seifert

UNI OF NEW ENGLAND, ECOSYSTEM MANAGEMENT

Another teaching year begins, jolting **Andrew Boulton** from the relaxed pleasures of being a conference junkie at SIL and the drought symposium over the last 2 weeks. **Kim Jenkins**, finishing up her thesis, took time out to present papers at both conferences and **Marcus Finn** also talked about his work on ecological responses to anthropogenic drought at the drought symposium. **Colleen Watts** celebrated acceptance of her of PhD on phosphorus dynamics in two inland reservoirs with her usual calm demeanour while **Paul Butcher** celebrated his scholarship to support his mud crab PhD research with a little less decorum. **Sue Botting** has returned to Adelaide to finish writing up in the relative peace of inland SA. **Peter Berney** has completed his interviews for his oral history of the limnology of the Brunswick River (cosupervised with **Patrick Pahlow**, NSW DLWC) and **Rachel Eberhard**'s dam study also approaches completion.

This year commences with several new Honours students: **Anna Guerney** looking at the effects of gravel extraction on EPT in some coastal rivers, **Amanda Byrd** exploring siltation impacts on aquatic macroinvertebrates from forestry activities and **Sarah Mika** plans to work on correlations between microbial activity and meiofaunal abundance in several coastal systems entering the Solitary Islands Marine Park (SIMP). Marine and estuarine 'limnology' is taking a boost from the $12million National Marine Science Centre being constructed at Coffs Harbour in the grounds of the Pacific Bay Resort and many freshwater projects seem to be taking a distinctly salty turn in anticipation... The NMSC is a joint venture between UNE and Southern Cross University, and its location in the SIMP means that coastal catchment work will be integrated into marine park management in this rapidly growing area. Courses are expected to commence in 2002 and more details can be obtained from Steve Smith in Zoology at UNE.

Andrew spent an interesting Christmas and January, hosting a suite of French and Swiss scientists down on the coast in the Never-Never River, creating spates with plastic and chicken wire and tracking fauna, chemical and microbial responses in the hyporheic zone. Shortly after, a 1in5 year flood devastated the study area resulting in the region being declared a disaster area and certainly causing a few changes in the surface community as well as the hyporheic zone. A Fulbright scholar, **Ryan Szuch**, has arrived from the US for a year's work on hyporheic processes in Rocky River and brings a wealth of groundwater and chemical expertise from swampy wetland studies with the Smithsonian Institute. Most important is his enthusiasm for sausage rolls and pies, and the Armidale economy has been helped greatly by the mighty greenback.

From: **Andrew Boulton**

ERISS

There's to be a gathering of the clans at Wildman River Wilderness Lodge on Friday 2 March, when the NCTWR Advisory Committee gets together to talk about priority research and training issues for tropical wetlands. However, it's not all talk – most are taking up the opportunity to see the fantastic Mary River wetlands on the following day, perhaps with a spot of fishing for a few dedicated anglers who are keen to catch a barra or two...

The NCTWR Board of Management meeting is on Mon 5 March, provided everyone survives **Max Finlayson's** airboat expedition across crocodile-infested floodplains (!!), and then it's back to the grindstone, tackling the array of wetland projects crowding our calendar this year.

However, more about that in the next newsletter – I'm off the the Wildman, trailing paperwork and powerpoint projector in my wake, looking forward to an escape from the airconditioned office into an email-less world of flooded plains, waterbirds and the tropical sunshine...

From Abbie Spiers...
National Centre for Tropical Wetland Research

And from Frederick Bouckaert, an update on the....

Ecosystem Protection Branch

During the summer wet season, **James Boyden** was assisted with his creekside monitoring in Magela Ck downstream of Ranger by **Michael Roache**, who is doing a degree in environmental science at UTS. **Michael (aka Elvis**, due to his statistically significant similarity in haircut) did an excellent job in comparing egg production in two stocks of snails, *Amerianna cumingii*. No significant differences were detected between stocks, so that we can now be confident that replenishing our stocks will not carry a bias in our snail test results. **Elvis** was also assisting in many other ways with the routine set-up and maintenance of tests, and is already dearly missed around the place. **James** also gate-crashed the lab a couple of nights to finish his remote sensing project for monitoring minesite rehabilitation, before the ER mapper package was transferred from our Jabiru field station to the Darwin office.

Baseline data collection of macroinvertebrates and fish communities for Jabiluka is continuing this wet season, with samples already collected in December, January and February, and more to be collected during March and April. **Frederick Bouckaert** attended the 13th taxonomic workshop in Albury, and was getting so enthused by the new taxa that on his return to Jabiru he drove his car into the flooded Scotts Creek, where it collected bucketloads of water with probably a few bugs in it as well. After being towed out he finally made it back home without a rear bumper, but not without nearly being swept away in the Wildman River which had 30 to 40 cm flowing over the road. It only takes a few days down south to forget how much water we can get up here! Meanwhile, **Clint McCullough** went all the way to the Solomon Islands to collect more diatom samples for Dr. Jacob John at Curtin University, WA, which was as good as any excuse to grab some well deserved holidays, after his first year into his PhD project on the effects of MgSO4 on macroinvertebrate communities in Magela Creek. **Chris Humphrey** travelled to Hobart to participate in a mining industry workshop on the implementation of the new ANZECC/ARMCANZ Water Quality Guidelines. The Guidelines will finally !!! be published and available in late March. **Chris leGras** and **James Boyden** also completed a project investigating the composition and extraction behaviour of uranium in Ranger Retention Pond 1 sediments.

Freshwater Biological Monitoring Group – Queensland Department of Natural Resources

Everyone here at Rocklea has had a busy Christmas period. The highlight has been **Diane Conrick** finalising the report for the National River Health Project. With the finish of this project the Queensland Government has continued the research by embarking on a new ambient monitoring project.

The pilot for the integrated monitoring project being carried out in the Condamine-Balonne catchment has been postponed due to the recent rain and flooding so everyone has had a chance to get stuck into office and lab work (as if we want more of it).

As a result **Chris Marshall** is close to finishing off the invertebrate section of the South-east Queensland DIBM3 project. He has been trying to do this while forcing himself to take some time off the hectic scheduling by holidaying in sunny Tasmania and attending risk management workshops in Melbourne.

Chris Thomson is busy working on the Mitchell River Catchment study and putting together a series of DNR fact sheets and brochures on freshwater biomonitoring and research.

Jon Marshall has been busy organising the Condamine-Balonne project while putting the finishing touches to his PhD. It looks like the next newsletter will be announcing the unbelievable that he has finally submitted and is bored because he misses spending his weekends and spare time dealing with it.

Our illustrious leader **Satish Choy** is still on higher duties as Acting Principal Engineer.

Bernie Cockayne attended the taxonomic workshop in Albury. He likes the place so much that on spending two days back in sunny Brisbane he headed off in his car back to Albury on holidays. **Bernie** has become a local expert on some taxa. A growing opinion here is that he is our expert for species id of leeches and nematodes

Professor Jií Komárek from the University of Southern Bohemia, Czech Republic, visited our laboratory and spent two days with **Glenn McGregor** discussing aspects of Australian cyanoprokaryote taxonomy and ecology. This included a field sampling trip to North Stradbroke Island where they collected planktic, benthic, periphytic, and eplithic algal material from a wide range of biotopes. **Professor Komárek** was of the view that a large proportion of the material collected contained previously undescribed cyanoprokaryote species. During his visit to Australia, he has agreed to edit a taxonomic guide prepared by **Glenn** and **Larelle Fabbro** (Central Queensland University) on the planktic Chroococcales that will be presented in July this year at the 3rd Australian Algal Workshop.

Peter Negus has finally finished off the report on defining the links between the ecological condition of streams and their flow characteristics. The group was awarded a DNR commendation for the work carried out in this report.

Finally the recent ASL Qld pub seminar night (which was organised by the ASL Qld Rep. **Jon**) went over well with **Stuart Bunn** talking about the Ok Tedi Mine and the Fly River in PNG. Jon assures us that the next one will be quite soon (ie May).

From **Peter Negus**

AUSTRALIAN WATER QUALITY CENTRE SOUTH AUSTRALIA

Aquatic Ecology & Biomonitoring sub-unit

There are some new projects on the books including ID work for the Blue Mountains Council and DLWC. Work on the final version of the AusRivAS models for South Australia is progressing. As well as increasing their precision, it is hoped that this generation of models will allow assessment of saline and lowland Murray sites, which did not fit earlier versions.

The annual report on the AMD impact on Dawesley Creek is in preparation. **Peter Schultz**, **Amber Lang**, **Tracy Venus** and **Vlad Tsymbal** made the long drive to Albury in February for the taxonomic workshop. **Chris Madden** reported on macroinvertebrates in the Lake Eyre basin to the SIL congress in Melbourne.

Darren Hicks has joined the team processing samples. He adds native fish identification and sampling to our macroinvertebrate skills.

Peter Schultz

AUSTRALIAN MUSEUM

Buz Wilson & **Steve Keable** are progressing with their study of the fresh water isopods throughout Australia. The Australian Museum's SEM lab is churning out hundreds of stunning images that will be used in the planned monograph. Last year's work on isopods from the Grampians has turned up at least 6 new species and one new genus. Some results will be reported at the Crustacean Conference in Melbourne in July. During March 2001, Buz & Steve are visiting freshwater localities of described species all over Tasmania and around Thorpdale Victoria. The Great Lake will be a key sampling locality in Tassie. Field trips like this usually result in our finding even more species of phreatoicidean isopods, so stay tuned.

From: **Buzz Wilson**

AUSTRALIAN WATER TECHNOLOGIES

Queensland Team

We thought it was time to add to the scuttlebutt and let everybody know what our team has been doing in Queensland. We have a small multidisciplinary group of 12 people in Brisbane (analysts and consultants) and have been working on a range of environmental projects over the past 2 years. On the Limnology front **Garry Bennison** and **Kim Clark** have been working with Brisbane City Council on a number of urban creek waterway management plans. AWT Queensland has contributed water quality, vegetation, fisheries, and aquatic macroinvertebrate expertise to the studies. **Garry** and **Kim**, along with **David Rohweder**, **Trevena Atkinson**, **Michael Gregory** and **Rebecca Hayman** (Mick & Rebecca from AWT Victoria), have just completed a major project for SunWater on the Burnett River at Bundaberg. The study looked at the impacts of the operation of Walla Weir on aquatic macroinvertebrate, platypus, and turtle populations in the river, as well as impacts on water quality and physical habitat structure. The team camped out on the Burnett River for 15 days and used a small boat to travel up and down the river and snorkel for turtles. Even though we were in Bundaberg at the heart of rum country we didn't come across any white polar bears !

Garry Bennison and **Kim Clark** are about to embark on the second year of a three year project for Toowoomba City Council looking at the impact of the Wetalla WWTP on the health of Gowrie Creek. **Garry** and **Kim**, along with **Rebecca Hayman** will sample aquatic macroinvertebrates and water quality from 7 locations on Gowrie Creek. This work follows a similar project completed for Cairns City Council which looked at the impact of 5 WWTP's on the ecological health of two freshwater rivers and three estuaries in and around Cairns. **Garry** and **Phil 'Mick Dundee' Mitchell** (AWT Victoria) braved crocodile infested waters (during the croc breeding season) to collect macroinvertebrate samples by dangling a grab sampler over the edge of a small boat and retrieving it by hand.

AWT Queensland in conjunction with Fisher Stewart ID&A (**Carla Kinross**) has just completed a survey of 10 urban lakes for Maroochy Shire Council. **Carla** and **Garry Bennison** are about to start work on the Phase 2 program which will examine in much closer detail 5 lakes identified from Phase 1 as priorities for management action. **Garry** is also working on a 3 year integrated weed management program at Lake Samsonvale for SEQ Water (along with **Nimal Chandrasena** from AWT Sydney) and an ongoing biological monitoring program of SEQ Water storages and inflow streams (with **Kylie Waller** from AWT Victoria).

Kirsty McCann has her head down working on a catchment management plan for the South Pine River in conjunction with John Wilson & Partners, having just successfully completed two EIS's for STP upgrades for Hervey Bay Council and three REF's for AWT Engineering in Sydney.

John Driver continues to chalk up the miles designing, constructing, installing and maintaining water quality monitoring stations for Gold Coast City Council and Pine Rivers Council. In between running the Queensland office John has also been working with **Tony Chiffings** (AWT Sydney) on developing innovative monitoring strategies and designing remote monitoring stations to investigate the environmental triggers behind the massive *Lyngbya* algal blooms which have occurred recently in Moreton Bay. This work forms part of the Stage 3 SE Queensland Regional WQ Strategy.

From: **Garry Bennison**

MURRAY-DARLING FRESHWATER RESEARCH CENTRE

The Victorian Department of Natural Resources and Environment has appointed the CRCFE to head a Scientific Panel Assessment of Environmental Flows for the Broken Basin. The Panel is headed by **Terry Hillman** and includes **Paul Humphries** and **Peter Cottingham** from the CRCFE; **Leon Metzeling** (Environment Protection Authority); **Michael Stewardson** (Melbourne University); **Graham Hannan** (Goulburn Murray Water); and **Jane Roberts** (Environmental Consultant). The project commenced in February, with the final report due at the end of June 2001.

Two Scientific Panels, the Murray Panel and the Barrages Panel, that had previously reported on ecological aspects of flow and flow management down the length of the River Murray (but not including the Lower Darling, the Lower Lakes and the Murray Mouth), were reconvened in January 2001. Their task was to consider, evaluate and comment on 9 Modelled Flow Options, and 29 Technical Option prepared for submission to the Murray-Darling Basin Ministerial Council by the Water Quality and Environmental Flows Project within the Murray-Darling Basin Commission. **Terry Hillman** has been part of this scientific panel and a draft report "An Assessment of Modelled Flow and Technical Options for the River Murray" has been prepared.

Terry Hillman has been appointed Chairman of the La Trobe University Albury Wodonga Campus Regional Advisory Board and become a member of the La Trobe University Council for the coming triennium.

Terry Hillman was Chairman of an Expert Panel on "The Murrumbidgee: Assessing the 'health' of a working river" that was jointly commissioned by the Agribusiness Taskforce (representatives of several irrigated industries) and Department of Land and Water Conservation. The report was completed in February.

Darren Baldwin, Paul Humphries and **Rhonda Sinclair** jointly organised the first symposium assessing the environmental impact of droughts on aquatic ecosystems. Over 90 people attended the 3 day symposium, with approximately 40% being overseas registrants.

The 13th CRCFE/MDFRC Taxonomic Workshop was held at the Lake Hume Resort, Albury, on the 12th and 13th February 2001. The workshop covered a wide range of invertebrate groups from the primitive nematodes and leeches to the snails, through to the more advanced insects, the aquatic caterpillars.

The final meeting of the Reference Panel for the Land and Water Australia project "River floodplain interactions during high flow" met on 15 February. The field and laboratory work for the project has been completed and two of the proposed seven manuscripts completed. The project finishes on 1 July 2001.

Shane Perryman and the Goulburn River project have finished. **Shane** has now moved to CSIRO in Canberra. **Mel Pearson** has moved to Armidale to continue her studies. Summer vacation students **Lloyd Godson** and **Matt Dale** have been at the MDFRC for ten weeks and have completed their projects. **Lloyd's** project was entitled "Longevity of Resting Eggs in a Sediment Core collected from a Permanently Flooded Billabong". **Matt's** project examined the distance that Murray cod larvae drifted in the Broken River.

From:**Dazza Nielsen**

CENTRE FOR CATCHMENT AND IN-STREAM RESEARCH, GRIFFITH UNIVERSITY, BRISBANE

Good news with the safe arrival of two happy, healthy "**CCISR** babies". Congratulations to **Fiona** and **Harry Balcombe** on the birth of **Angus** and **Romeny Lynch** (and husband Cliff) on the birth of **Estella.**

Speaking of safe deliveries, **Joanne Clapcott** recently handed in her Masters Thesis entitled: Can C4 plants contribute to Southeast Queensland aquatic food webs. Using her favourite shredder, *Anisocentropus kirramus*, **Jo** found that while aquatic insects can eat C4 plants, such as para grass and sugar cane, they cannot assimilate it. This would seem to explain its apparent absence from aquatic food webs in Australia.

Mark Kennard and **Brad Pusey** recently described a new species of Percichthyidae (The Bloomfield River Cod). This will be published in the next issue of Ichthyological Exploration of Freshwaters. Congratulations to **Steve Mackay** who was awarded a CRCFE scholarship to study the flow requirements of aquatic macrophytes in southeast Queensland. The **DIBM3** team are working frantically to finish their final report which is due in March. The recommendations will be used to develop an Ecosystem Health monitoring Program for Southeast Queensland.

Wade Hadwen and **Michelle Winning** are currently on Fraser Island finishing off **Wades** fieldwork. Apparently the Fraser Island turtles have been finding **Wades** agar plates to be very delectable. **Samantha Capon** recently presented her confirmation seminar: Flooding and Functional Diversity in Plant Communities of Australian Arid Floodplains. **Claire McKenny** has begun sorting earlier collections of invertebrate grazers from a number of Southeast Queensland streams.

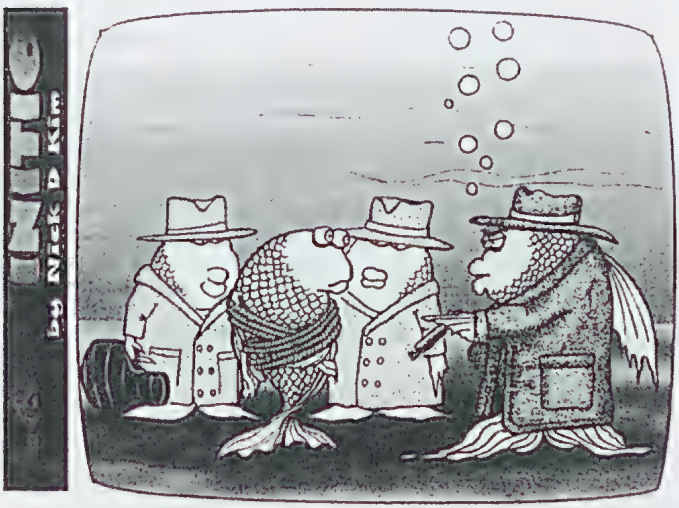
From **Stephen (Harry) Balcombe**

ADELAIDE UNIVERSITY - GEOGRAPHICAL & ENVIRONMENTAL STUDIES

Its Oweek 2001 which means we survived the Departmental Review and the University-wide structures review - for a little while at least. There was something about us becoming part of the Science Faculty but given that the Science Faculty is a moving target at the moment who knows where we'll endup.

Unhindered, the diatomists have launched 'DIATOMA' catering for all your diatom biomonitoring and taxonomic needs (visit us at http://chomsky.arts.adelaide.edu.au/Diatoma/). **Sophie Bickford**, resting in India after completing 10.5 of eleven PhD chapters on Fleurieu Peninsula wetlands, continues to count Daly River diatoms for **Simon Townsend**'s project under the Environmental Flows Initiative as well as impacted rivers project samples for **Bruce Chessman** DLWR and samples for **Peter Newall**'s nutrient guidelines study in Victoria. **Sorell Bulpin** collected a 1st for her thesis on Tareena Billabong near Wentworth and won the student prize for her presentation at the Australian Quaternary meeting when we all should have been at SIL. **Craig McVeigh**, interspersed with stepping in to take on diatom counts at short notice, is pushing on in his PhD work on the 1000 year eutrophication history of Brazilian lakes and plans to return later this year. **Gus McGregor**, **Cameron Barr** (retropsective studies on the lower Snowy and Watervalley Wetlands respectively) and **Louise Mutton** (biomonitoring copper mines releases into a creek in the gulf country) join as part of the 2001 honours crop. **Peter Gell** and **Sophie**, along with **Jeannette Hope** (River Junction Research) and **Mike Reid** (Monash) hosted a 2-day workshop at Wentworth in November entitled "The Future of the Murray Darling Basin - lessons from history' and are busy assembling the proceedings. Otherwise we're all looking forward to the next algal workshop (register your interest at Algalworkshop@dnr.qld.gov.au) and ASL.

Peter Gell



"Let's get this straight: either you talk, or we send you to the surface in a polystyrene overcoat."

CENTRE FOR PALYNOLOGY AND PALAEOECOLOGY AT MONASH

This is the first contribution from the Centre for Palynology and Palaeoecology at Monash. Though initially established with a focus on deriving fossil records of climate change, the lab now has an active interest in the use of palaeoenvironmental techniques to understand human impacts on aquatic systems. Diatoms are foremost amongst the indicators used for this purpose. **Paul Leahy** (PhD student) is examining environmental change in the Yarra River catchment utilising cores from two billabongs (one rural, one urban) in combination with intensive monitoring of four billabongs. Unable to remove himself completely from sewage impacts (the subject of his honours research), he has also been counting diatoms from the Goulburn River for WSL consultants. **Jennie Fluin** is in the final stages of her PhD examining cores from Murray basin sites (Lake Alexandrina and Cullulleraine). She has principally been examining changes in salinity and TP over a 2000 year period within these two systems. Jennie has also been stirring the pot by suggesting that current diatom transfer function techniques may be inappropriate for such systems. **Nerida Bleakley** is in the latter part of her PhD, studying the sensitivity and response of diatom assemblages to Holocene climatic and ecological variability in pristine coastal embayments in the Vestfold Hills, Antarctica. **John Tibby** has been working on reconstructing salinity of the "European" period from lakes in the Tower Hill volcanic complex as a complement to the work of Michael Barry (VUT) on evolutionary responses to salinity in *Daphnia*. John has also been counting Murray River diatom phytoplankton to aid in interpretation of Murray fossil records. **Dan Penny** has been working collaboratively with the Centre on Holocene records of flooding in the lower Mekong River Basin. His work is also informing the debate about rates of infilling Tonle Sap, a highly important lake system in Cambodia, and its effect on the ecology and sustainability of the system. **Michael Reid** has returned to the Centre for a short stint and is continuing earlier work on Murray Billabongs which examines the extent of pH increases following catchment settlement and determining the effects of river regulation on riverine and billabong phytoplankton populations. Michael and Ralph Ogden's (U. Canberra) hypothesis about macrophyte decline in these systems is currently being evaluated by **Carl Sayer** (University College London) who is examining macrofossils remains from one of the sites.

From **John Tibby**

WSL

Richmond's favourite ecologists have plenty of news. Airconditioning! Aaah! Also, WSL Consultants have welcomed **Alistair Cameron** (ex-AWT) and **David Bryant** (ex-EPA, AWT) to the Biology department. **Alistair**'s vast experience in biological consulting to the water industry, and his musical tastes, has earned him a place of respect among all at WSL. He has been instrumental in improving and implementing a range of quality systems and, together with **Dan Vertessy** and the IT department, has been constructing a new database, compatible with AUSRIVAS requirements. Alistair's report and proposal writing has meant a few late nights, but this has meant a steady stream of work for the biology department.

David Bryant joined the biology lab just before Christmas last year, finishing his job at the Australian Quarantine and Inspection Service. It seems the drugs just didn't work for him and he was drawn back to the freshwater sciences by the alcohol fumes. It's great to have his broad general knowledge and keen practical, hands-on abilities in the lab. He has taken on the job of updating and organising WSL's collection of taxonomic references, which has meant that his photocopying and binding skills are second to none. David also initiated the Biology BMX gang, with up to 4 bikes parked under the biology lab each day.

The MDFRC taxonomy workshop in Albury was attended by four from the lab and was thoroughly worthwhile, the highlight being the stuffed Leptoperla used by **Eddie Tsyrlin** in his presentation – **John Gooderham** may find himself being overrun with orders. Familiarity with the new taxonomy and meeting others in the same game is what the workshops are all about and we are grateful to **John Hawking** and **Melanie Pearson** for their organisation. Noticeable by her absence from the workshop, **Kylie Swingler** may have enjoyed her touring in Thailand, but we feel she missed out in Albury.

Jim Radford has moved with his family from Melbourne to Bendigo, limiting his activity with us in the biology office. His involvement with WSL will continue on projects that he has been involved and his expertise on matters statistical will continue to be a feature of WSL reports. **Karen Simonsen** is back working at WSL two days a week, after maternity leave with the birth of **Caroline** last year. It's great to have her back doing algal analyses, especially during the summer peak time.

Big news in the lab is our successful tender for the NSW Department of Land & Water Conservation wetlands project involving several months work of macroinvertebrate ID's. WSL is very proud to be involved in this project for the second year. It's these sort of large scale bug projects that really gets the lab excited. **Patrick Maiden** is looking forward to tackling the mites head-on, with the assistance and guidance of **Jane Growns**.

From Julie Rissman

FASTS

PRESIDENT'S REPORT

FASTS Board Meeting, February 23, 2001

Science and technology have come to the forefront of the national agenda for the first time in more than a decade. Recognition of the pivotal role of innovation in the nation's prosperity has come late, but is no less welcome for that.

The Prime-Minister's Innovation Action Plan will boost the nation's investment in research by three billion dollars over the next five years. By the fifth year, the investment will be an extra one billion dollars per year. As the Prime-Minister said, this is an important 'first step' in Backing Australia's Ability.

There is a sea-change in recognition that intellectual capital is at least as important as labour and capital in ensuring the social, economic and environmental well-being of the nation. Admittedly, Australia has come to this realisation a little later than some other countries, but we have not missed the bus. There are fleets of buses leaving, and we want to drive them! This is the message we gave to the Prime-Minister's Science, Engineering and Innovation Council.

The Innovation Action Plan would not have been possible without the work of FASTS' member societies. The unified voice of scientists and technologists, together with those of business, have been critical in ensuring the implementation of the Chief Scientist's recommendations. Of Robin Batterham's 20 recommendations, 18 have been adopted, and the other two implemented in a modified form. The Batterham report strongly reflected FASTS proposals, as the attached table shows.

We should not under-estimate the impact of 180 scientists from across the country converging on federal parliament last November, delivering the Batterham report. This has helped make investment in science and technology a non-partisan affair, even in (or should I say, especially in) an election year. Your support for the FASTS' Science Meets Parliament Day was critical in getting the message across the line.

The Innovation Action Plan is about more than research dollars. It is about Australia's value system. It is about valuing our scientists and technologists. Status took a heavy knock after the Dawkins' reforms, and in the following years when our universities and research institutions were under-valued. This situation is being reversed. There is a ground-swell of realisation in the community that we must value and reward our intellectual capital. You have helped bring about this sea-change.

When Robin Williams asked the PM on the Science Show what factors had led to his 'conversion' to science and technology, he replied that the presentations to the Prime-Minister's Science, Engineering and Innovation Council had been important. He said that the positive response to the Government's increase in research funds for the National Medical Research Council (NHMRC) had been another important factor. Some FASTS' member societies have sent a positive note to the PM, noting the 'important first step' that has been taken by the Commonwealth Government.

We need the continued support of our member societies for the Innovation Action Plan, to ramp it up and top it up! Michael Lee, Shadow Minister for Education, committed to this last Friday 16 at the Go8 Forum.

The PM will Chair the Implementation Committee for the Innovation Action Plan. This is extremely important, because it means that the Government means business and is not engaged in a 'smoke and mirrors' exercise. FASTS will keep a close watch on this, to maintain a sense of urgency in investment in R&D and to ensure early development of guidelines for the various programs.

Lessons must be learned from implementation of the "doubling" of funds for the NHMRC, announced in May 1999. As the first step in "doubling" the funds, the Commonwealth Government announced enhanced investment of ten million dollars in medical genomics in the 1999 budget. It was not until March 2000 that NHMRC announced its Medical Genomics Program and called for expressions of interest for projects that would help build Australia's biotechnology base, through large-scale DNA sequencing projects. Successful applicants were advised this month!

The pace of technological change is frenetic and international competition will not wait for us to sit in peer review committees for two years in order to distribute ten million dollars! FASTS will be working for rapid implementation of the Innovation Action Plan.

FASTS tries to maintain a careful balance between bleating from the sidelines and being in the mainstream of science policy development. Our membership of the Prime-Minister's Science Engineering and Innovation Council is part of this. Our Executive Director, Toss Gascoigne, ably assisted by Robyn Easton, works hard to ensure we punch above our weight. But nothing could be achieved without the input of volunteers, including Ken Baldwin as Chair of FASTS' Policy Committee, our two Vice-Presidents, Jan Thomas and David Denham, members of the Board, and the Presidents of our member societies.

This year FASTS will be focused on implement the Innovation Action Plan, on how to ramp it up and top it up, and on ensuring this becomes a non-partisan issue that stays on the agenda through any changes in Government over the next five years.

The community, and the Government, has sent a strong message to us that our scientists and technologists are valued. We shall continue, through FASTS, to promote respect for the achievements of our member scientists and technologists.

Sue Serjeantson
President
Federation of Australian Scientific and Technological Societies
March 2001

A SEA-CHANGE FOR SCIENCE

FASTS'response 'A Sea-change for Science' to the PM's science statement

Australia's scientists welcome with enthusiasm the Prime Minister's announcement of a land mark increase in the national investment in scientific research and the innovation system today (Monday).

Professor Sue Serjeantson, President of the Federation of Australian Scientific and Technological Societies (FASTS), said that injecting national funds into this area was the best mid to long-term investment Australia could make.

"We have re-entered the race to be internationally competitive," she said. "This marks a sea-change in Government thinking.

"It is a clear sign that the nation has recognised that investment in science and research is the surest way to creating the new sustainable industries of tomorrow, and the new high-pay, satisfying jobs that go with them.

"This is a great start. It drives home the message that science means business.

"This is a huge vote of confidence in Australia's scientists and engineers.

Professor Serjeantson praised the package as "an astute mix", combining encouragement for industry to innovate, new laboratories and facilities, and support for basic research, the power-house of science.

She hoped these measures would reverse the brain drain of Australian scientific talent overseas.

"Australian scientists can look forward to better links with industry, improved chances of winning national funding for research, and a gradual improvement in their libraries and laboratories.

"This is the first win for science in a decade. Recognition may have come late, but it's no less welcome for that."

NEW FUNDING ROUND FOR CRC

The announcement of a new round of research ventures between Australian industry and Australian scientists is a vote of confidence in the ability of science to provide answers and generate new industries.

In the announcement today (Thursday), the Government has released the names of the nineteen Cooperative Research Centres (CRCs) that were successful in the recent funding round.

Dr David Denham, Vice- President of the Federation of Australian Scientific and Technological Societies (FASTS), said the funding round was hotly contested.

"This represents a growing maturity in the relations between science and industry," he said.

"The CRC Program is making an excellent contribution to Australia's research capacity. It encourages interaction between research teams from universities, industry and government.

"Australian scientists do plenty of excellent work but not all of it is picked up by industry and other end-users.

"With the CRC process, the people who are most likely to use the research become part of the process of planning the research. This means the potential of the research can be realised."

"FASTS has consistently argued for an expansion of the CRC Program in submissions to Government, to the order of $50 million per year."

He congratulated the Minister for Industry, Science and Resources Senator Nick Minchin and the Government for their strong support for the CRC Program.

Dr Denham said the announcement today did not represent any new funding for the CRC Program. It remains steady at about $140 million per year.

"We are hopeful that overall funds flowing to the CRC Program will be boosted when the Prime Minister launches his Innovation Action Plan on Monday January 29," he said.

The Prime Minister will be announcing the plan at the Australian Technology Park Centre at Eveleigh, in Sydney.

The Chief Scientist, Dr Robin Batterham, has recommended an increased investment in the Program of $150 million over five years in his recent report "The Chance to Change".

Comparing FASTS, Batterham and the Innovation Statement

The table below compares FASTS' "Billion Dollar" list (April 2000), with the recommendations in Dr Batterham's "A Chance to Change", and the final figures in the Innovation Statement (January 2001). All figures in $millions.

	FASTS April	Batthm Nov	Innovat Jan
Double funds to the ARC large grants	500	660	736.4 **4*
Improve laboratories and libraries in universities	500	275	583 **5*
New scheme for major national research facilities	300	400	155
Retraining, HECS relief for science and maths teachers	100	264	130 **6*
Assist libraries with electronic subscriptions to journals	50	5	
Measures to stimulate careers for younger scientists	250	38.6	Yes (in ARC)
Tax credits to stimulate innovative companies	1,250	Uncosted	128
Additional funding for the CRC Program	250	150	227
Priority environmental projects	200		**1*
Boost funding to science agencies (CSIRO, AIMS, etc)	350	**2*	Indirectly
New commercialisation stimulants	100	175	775 **7*
Increase funding to awareness programs, specially industry	100	**3*	
University salary levels for NHMRC and ARC fellowships	50	No	Partly through ARC
Overdue university salary increases (scientists' share)	1,000	nil	nil

*1 funded through other initiatives eg salinity
*2 no direct dollars except access to ARC grants, new funds for CRC, commercialisation
*3 affected by (3) above
*4 includes doubling ARC project grants, Federation Fellowships, Doubling ARC postdocs, Improving ARC salaries and establishing centres of excellence in biotechnology and IT
*5 includes infrastructure and expanded RIBG
*6 re-badged as fostering S&T skills in schools
*7 includes expanded R&D Start and COMET, Innovation Access Program, Pre-Seed Fund and New Industries Development program

Summary:
The recommendations in the Batterham report add up to about 75 per cent of what FASTS r ecommended.

Expenditure in the Innovation Statement is about 58 per cent of what FASTS recommended in its total package. This proportion rises to 76 per cent, when measured against the issues in the FASTS package the Government chose to address ($2.9 billion of the $3.8 billion we recommended).

FASTS – VALUE FOR MONEY?

Sometimes the question may arise in your Society: "are we getting value for money for our subscription to FASTS?"

The Prime Minister's recent announcement brings $2.9 billion dollars into the science and research sector. We hailed it as a useful first step.

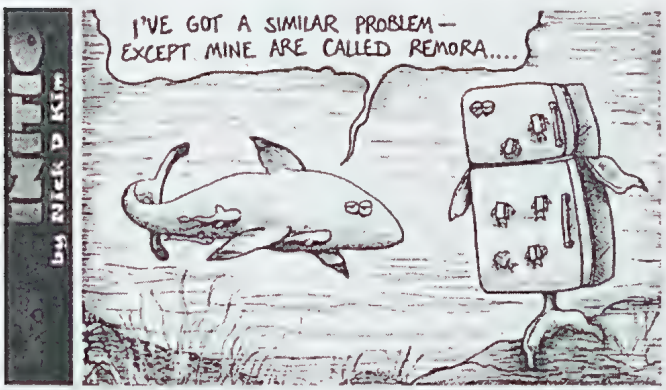
We called for a mini-Budget response to science funding in May last year, and Innovation Statement was released in January - out of the normal Budget cycle.

FASTS has played a very active role in creating the political climate in which the Statement was made. We constantly raised issues and publicised the benefits of increasing the national investment in S&T.

Subscriptions from members have allowed FASTS to:
... coordinate "Science meets Parliament" Day
... discuss science and technology in the media
... raise policy issues at the Prime Minister's Science Council
... run forums at the National Press Club
... respond to inquiries and Parliamentary Committees

FASTS is recognised as a leading player in these discussions. Without our involvement, the Innovation Statement may have been a significantly different document.

Toss Gascoigne.



The little-known Refrigerator Fish.

SCIENCE AT CENTRE STAGE

Australia's peak council for scientists and technologists today (Wednesday) predicted that science and technology is moving to centre stage in debates about Australia's future.

Climate change, public health, genetically-modified food, information technology, salinity, energy, disposal of nuclear waste are all unresolved issues on the public agenda.

Professor Sue Serjeantson, President of the Federation of Australian Scientific and Technological Societies (FASTS), said scientists and technologists had to work more closely with Parliamentarians, to help them construct Australia's future over the next decade.

"Bill Clinton said last month that the language of science is about to become a much more pervasive part of life," she said.

Professor Serjeantson was releasing FASTS' "Ten Top Issues", a list of priority issues for 2001.

She predicted that science will continue to become more integrated with national policy-setting, as President Clinton has suggested.

"Ultimately, science means new industries and new jobs. It's the way forward - an improved environment, better healthcare, enhanced economic competitiveness, solutions to the problems that drag our society back.

"Science doesn't have all the answers, but it is always part of the solution."

"The Prime Minister's commitment to his Science, Engineering and Innovation Council has raised the political stakes," she said. "Major decisions on national policies are having their birth in PMSEIC, a Council where the Prime Minister has shown a great deal of interest.

"FASTS' 'Science meets Parliament' Days have opened up a new conduit for information, and I have been struck at how useful and enjoyable Parliamentarians and scientists find this event."

The Government is expected to make a major statement on science later this month, with a significant boost in the national investment in science and research.

But Professor Serjeantson said she hoped the increased investment would come into effect immediately, ramping up over time.

"Frankly, Australia can't wait," she said.

"TEN TOP ISSUES" FOR 2001

1. INCREASE THE NATIONAL INVESTMENT IN SCIENCE

Australia needs a new national approach to science, beginning with a substantial increase in our national investment. The recommendations of the final Batterham Review document should be implemented as a package, as the first stage in rebuilding our national investment.

2. BUILD ON OUR CAPACITY TO COMMUNICATE SCIENCE

Australians need a greater awareness of the possibilities and limitations of science if they are to make sensible decisions about how science will serve the national interest. A strong and confident ABC Science Unit will be a flagship in bringing science into Australian homes.

3. HELP PARLIAMENTARIANS TACKLE THE ISSUES

Science needs a stronger presence in Parliament to assist MPs make decisions on highly technical areas like greenhouse, IT and gene technology. Appoint young scientists as interns to MPs.

4. SCIENCE AND THE BOARDROOM

Adopt a "Science and the Boardroom" program, to bring science and industry together at the highest levels to assist in the transfer of technology and good ideas.

5. SELLING AUSTRALIAN SCIENCE OVERSEAS

Australia is an attractive place to do science business, but our international profile is low. Each major overseas embassy should have a science attache to sell our science expertise, and to stimulate collaborative research and development activity.

6. PROVIDING A START: SCIENCE AND TEACHERS OF SCIENCE

Science can inspire, but only when it is taught by highly-trained, well-qualified teachers working in modern laboratories with good textbooks. We need HECS relief and a vigorous national program to recruit and train science graduates, with refresher programs to keep their science up to date.

7. COHERENT POLICY ON MAJOR NATIONAL RESEARCH FACILITIES

Australia should work out the best way to run big science infrastructure. Establishing large national and international facilities requires regular funding and a systematic approach.

8. SCIENCE FOR THE BUSH

Coordinate Australian science to create jobs, improve existing industries, solve environmental problems and improve digital communication in regional and rural Australia.

9. BRAIN DRAIN BECOMES EXPRESS TRAIN

Australia is in danger of losing a generation of scientists and technologists overseas. Invest more in higher salaries, better career paths, and improved research funding to retain our best and brightest.

10. BENCHMARKING FOR BUSINESS

Australia must be more agile in attracting overseas companies to base R&D operations here, by offering competitive incentives and moving quickly to adjust our regulations and incentive schemes.

A POSTCARD FROM THE FREE MARKET

SAVING THE MURRAY-DARLING RIVERS – JUST DO NOTHING!

(with apologies to the farmers, water managers, politicians and scientists who are trying to do the right thing)

It should now be clear to most of us that our federal Environment Minister, Senator Robert Hill, is an environmental visionary. While most of us struggle with the key environmental restoration issues (mainly "what are we really trying to achieve?"), Senator Hill has a very clear restoration vision and objective - and a very cunning plan. His vision and objective? To restore the Murray-Darling Basin riverine environment to its pristine state. Not some Chardonnay-sipping acceptable version of the Murray-Darling River, still degraded, with a struggling ecology – but back to the glory of what it used to be. Not just pre-European .... nay .... back to it's pristine pre-human condition.

And his cunning plan – to do nothing. Take no significant action to reverse the decline of the basin.

And especially, do nothing about the Greenhouse Effect. The problem with the Murray-Darling system is that 80% of the water is diverted. The flooding regime has been reduced and the floodplain is isolated from the river. However, predictions of changes under an enhanced greenhouse effect are that floods will become more frequent and bigger. Hey, isn't this exactly what the river used to be like before pesky humans came along and started changing all the hydrology! Damming and diverting have altered the hydrology of the river to the detriment of the ecology.

The floods in northern NSW late last year were the worst in human memory. But they were probably well within the "natural" flooding regime that occurred before we started damming and diverting. We need more of those floods. Do nothing about the Greenhouse Effect and the flood frequency and volume will increase dramatically, returning the flood regime back to probably something like normality.

Of course, this increase in flooding will make much of the riparian land unusable for agriculture. Too much sodden land near the river too often. Too much crop loss and cattle loss close to the river. Farmers will probably have to fence the river off at some distance from the channel and declare the land unusable (say for a kilometre or so). Some farms will become uneconomic and be abandoned. What will happen? Well, with the new flooding regime and the lack of disturbance, those pesky red-gums and riparian trees will just regenerate in the unused land.

And with less land under cultivation, less water will need to be diverted – a feedback loop that will simply speed up the recovery process in the river. And hey, those large, now abandoned dams and rice field may well turn into new wetlands (all part of our commitment to international bird migration treaties).

Towns located on the river banks will eventually get sick of being under water and have no choice but to relocate to higher ground or be regularly flooded. They will then have a good view of the old floodplains, devoid of cattle and crops, returning to its pristine state.

This will alter the low flow regime of the river, turning it back to what it was before burning and clearing became common. So by managing the high flows (by doing nothing), the Senator also knows that the low flows will return to natural.

As the forest re-grows, snags will be naturally returned to the river. As water quality and habitat improve, carp will eventually disappear, outcompeted by native species. The floods will eventually take out all the willows (they don't survive too well in big floods).

As a visionary, Senator Hill realises that this will take time. I suspect that he has set something like a 2-300 year time frame to achieve his goal. But, if our current management and restoration activities continue as they do, I suspect that in 2-300 years, we will not be able to achieve the same result as doing nothing.

Other Government Departments seem to have taken up this theme as well. Globalisation seems to be hell bent on destroying some of the industries in the basin. Free trade of disease carrying products (e.g. New Zealand apples) should take care of that industry. I suspect it won't be long before the free-traders will want to relax import restrictions on British beef (should take care of any remnant grazing industry). And I'm sure there's some hidden environmental agenda in the current forest and vegetation management in Queensland (although just at the moment, the rationale seems to escape me).

So instead of complaining about the failure of the Climate Convention and attempts to curb the Greenhouse Effect, we should recognise them for what they are. All part of a cunning plan by the true champion of the environment. A man with a vision, a man with a true understanding of restoration ecology. And so we should adopt the new environmental chant:

"What do we want?" "More water." "When do we want it?" "Don't you worry about that – it's coming!"

Oh dear! I think I need to get out more!

By **Tim Doeg**

ARTICLES

"WHEN DID YOU LAST ~~SIGHT~~ CITE A TAXONOMIST?

Modified text from the opening address at the 13th Taxonomic Workshop held in Albury in February 2001 by Phil Suter.

Firstly, welcome to the 13th Taxonomic workshop. It is a pleasure for me to be here to welcome and open this workshop, but I am in this position because of injudicious comments made in the past.

What I would like to do is put the Taxonomic Workshops into context and also pass a comment or two on the actual versus perceived values of the outcomes of the workshops.

The first taxonomic workshop hosted by the MDFRC and John Hawking was in 1989 when the mayflies received their first airing when workshops were held on the Leptophlebiids, Caenids and Baetids. Not only were there some preliminary keys, participants could look at actual specimens and bring along some that they needed identifying too. Participants had direct access to the taxonomists.

Prior to this workshop the most reliable keys to the Australian aquatic invertebrates was William's (1980) Australian Freshwater Life or the north American publications by Merritt and Cummins (1978), Pennak (1989) etc. As Ian Campbell noted "the pictures were right, but the names were wrong". There were a number of individual publications for some Orders but generally they were not consolidated in single articles and were user unfriendly. To identify specimens you had to obtain numerous publications and then compare your animal with descripitions as keys were often fragmentary.

Today we have now nearly 40 identification guides which enable reliable identification of many Orders of freshwater invertebrates to at least generic level and in many cases to morphological species level. There are also keys to diatoms and the cyanobacteria.

We now have keys to Oligochaetes, Rotifers, Cladocerans, Bivalves, Gastropods, Amphipods, Decapods, Acarina, Insects (Mayflies, Stoneflies, Cadissflies, Dragonflies, Beetles, Chironomids, megalopterans and more this workshop including Pyralids, leeches, Nematodes and more Dragonflies and Syoneflies. In total there are now keys to over 90 families, and by the time we have finished tomorrow we will have keys to over 100 families. In addition to these keys, there have also been presented Keys to Keys (Hawking 1994, 2000), a Coloured Guide to freshwater invertebrates (Hawking and Smith 1997), an identification guide to pond dwelling invertebrates (Ingram *et al.* 1997) and a bibliography to some of the ecological and biological literature of Australian inland aquatic invertebrates (Pearson and Hawking, 2000).

These keys plus John's Key to Keys provide ready access to the taxonomic literature and the ability to identify many of the aquatic invertebrates to at least genus and in most cases to species. There still are gaps but we have Gunther, John, Mike, Winston, Frederic and Edward here to address some of these gaps over the next two days.

It is the ability to be able to find and use the taxonomic literature that I would like to comment a little further. These taxonomic guides have provided the ability for ecologists to identify the fauna reliably and comparably, as they should. Without them we would still be talking about Baetid species 1-26 and Caenid etc. These guides and workshops are important in that they put the means

of identification in every major laboratory in Australia involved with aquatic macroinvertebrates. And they are relatively inexpensive. So we all have them. So why don't we use them? Most of you will say we do!! I would debate this as the evidence suggests we don't.

I did a survey of papers published over the last 5 years in three of the main journals in which macroinvertebrate community studies are published namely; Freshwater Biology, Marine and Freshwater Research and the Journal of the North American Benthological Society. There have been 82 papers published in which generic and species identifications were made in the evaluation of communities of freshwater macro-invertebrates. Many were Australian. Of these 82 papers only 21 actually referred to any taxonomic literature for "identification of to the lowest taxonomic level". That is 25.6% actually referred to at least one taxonomic paper. Most of these 21 papers were in fact from the US. Of these, 3 Australian papers stated "identifications were made using the keys in Hawking (1994). This is the Keys to Keys publication. I mention this because without these 3 papers then only 18 (21%) would have cited taxonomic literature. As valuable as the Key to Keys is it was never intended to be the authority for identification. It is not acceptable to use it as such. It is the "entry point" to the taxonomic literature and provides a simple user friendly method of helping you find the appropriate literature. Of the 82 papers 17 acknowledged a taxonomist for verifying identification (ie. some 20%).
That is more than 50% of papers did not acknowledge their sources of taxonomic literature that enabled them to provide the species list at the back. One in fact stated "Invertebrates were identified to lowest taxonomic level using existing keys and literature." (no citation here to protect the guilty).

If my students did not cite their taxonomic references I would ask on what authority had they made their identifications. I would then ask if by not providing their source of information were they in fact guilty of using other peoples ideas and work without due reference. Isn't this plagiarism? Maybe that is a bit harsh, (or the ravings of a reformed taxonomist guilty of the same offence!) but the identification of a species or genus or any taxonomic level requires a statement of authority just the same as a statement of ecological fact requires a reference to be cited.

More interesting to me was that of these same 82 papers 51 stated the computer package used to analyse the data eg SAS, Systat, PATN, Microsoft Excel etc, that is 62% of the papers.

And of these 82 papers all that referred to functional feeding groups referred to the sources of the group definition eg Merritt and Cummins (1978, 1984, 1996).

Clearly for ecological studies the method of analysis and functional feeding categories are more important than the ability to identify the organisms which you need to be put into your statistical package.

This was further brought home to me when I was requested to examine a considerable number of vials of material previously sorted to Order with a two week deadline. This was to be done free gratis, a labour of love, while at the same time $20,000 was to be expended to create a database for the information I was going to provide, and without which the database was somewhat unnecessary. This is unfortunately not an isolated incident, and taxonomic work in this era of biodiversity is very poorly funded to such an extent that few see taxonomy as a career path and others find better support overseas. There certainly are limited funding opportunities.

Finally these workshops have not been possible without the work of the taxonomists presenting. Many have done the work without funding, and most of the guides you have in front of you are the product of many years, maybe decades of work. These guides are important publications. I know you use them, otherwise you wouldn't be supporting the workshops. So, if you use them, cite them. The taxonomists are providing valuable scientific data to be used by everyone and without their

work the ecological studies would be limited in their value, and certainly would not be comparable. It is important that we understand the ecological processes in our aquatic systems and reliable identification is the first component of this understanding. I have often heard it said that one of the major problems with taxonomists is that they are continually changing names of things and it is hard to keep up with these changes. Taxonomic research is a science. No sciences stand still. There are always changes. Ecological understanding changes with more information just as occurs with the taxonomic literature. If you can't keep up then the Key to Keys will help and there is probably a taxonomist that can assist in informing of any significant changes.

So, embrace (figuratively) the taxonomist who have devoted their time over the next two days and when you use their keys cite them for they have enabled you to clarify your ideas, and they give you authority to make sound ecological judgements. So next when I ask "When did you last cite a taxonomist?" you can reply "I always do".

Welcome again, and congratulations to John for maintaining the impetus of these workshops for 13years and for facilitating the considerable advances in Australian aquatic research.

Postscript

During discussions at the workshop with a number of colleagues including James Boags, it was stressed that voucher material for ecological studies should be placed in Museums or in institutions where taxonomists in the future can return and examine this material and verify identifications. In 50 years time there may be different taxa recognised, and with actual specimens then information is not lost. However, remember that Museums are not funded to sort your material, so some assistance may be required. Talk with them first before depositing vast collections.

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From: **Phil Suter**

WHAT IT FEELS LIKE BEING A DISGRACE TO ONE'S PROFESSION?

As a newcomer to ASL I have a confession to make ... namely that of unwittingly killing a glow–worm on the shores of Lake Te Anau in New Zealand. The circumstances that surrounded this tragic incident are as follows.

After landing on the shore of Lake Te Anau we were ushered into the caves (steeply graded conduits in limestone country) in parties of 12 at a time. We had strict instructions not to take photos, not to touch the glow-worms and not to talk because glow-worms, so we were told, were very sensitive to noise. However, once I noticed all the construction work that had obviously taken place inside the caves (the building of steel walkways and concrete weirs, the installation of lighting and overhead chains along which large aluminium boats are pulled by hand) I started to wonder how any glow worms could possibly be left after the cacophony of sound that must have accompanied the task ... and, now being in sceptical frame of mind, began to question whether the "glow-worms" just above our heads, were real.

At the time, we were standing on a dimly lit landing platform waiting to board our craft and, with my vast knowledge of matters limnological, considered the glow-worms above me looked too bright, too equally spaced and the blue colour looked unnatural. Convinced that they were artificial fairy-lights I reached up to check for signs of any tell tale wiring and got the "shock" of my life! A real glow-worm came away stuck to my finger and for fear of being it seen by one of the guides, I quickly flicked it away onto the floor and squashed it underfoot. Not quick enough for my wife however, who gave me an earful about being a disgrace to my profession ... but when the guide then started telling us, at the top of his voice, all about the private life of a glow-worm, I again wondered what underlay their earlier call for silence. The real reason is obvious. It is to create the right ambience for what is really a magical experience. That of being silently hand-hauled by boat through the caves with a myriad of little lights overhead, looking rather like the milky way on a clear night sky.

Question time for all you experts. Unlike the fireflies and "glow-worms" of Africa (wingless beetles that glow in order to attract a mate), the glow-worms of NZ are diptera larvae that glow in order to induce light-attracted insects emerging from the waters below into a tangle of glutinous threads that hang beneath them like fishing lines. Therefore, I would be grateful if anyone could enlighten me about the following:

- What accounts for the evenly spaced distribution of the glow-worms?
- What insects inhabiting the pitch dark, swiftly-flowing streams of underground water, serve as the glow-worm's prey?
- Why is the luminescence of some glow-worms brighter than others?

The guides could not help me, so few references on the subject would be most gratefully received.

George Begg
ERISS, PO Box 461, Darwin, NT, 0801

STRANGE TINY SNAILS FROM AUSTRALIA

A monograph has recently been published describing the tiny snails of the Glacidorbidae. Most of these flat-spired snails are less than two mm in diameter and live in a wide variety of freshwater habitats. This family previously had only four known species in one genus (Glacidorbis). There are now 19 species recognised, in four genera, three of the genera new. The only known relative of Australian glacidobids is a single taxon in Chile and the relationships of the family are obscure.

Most species are found in Tasmania (12), with most of these in the north, one is shared between Victoria and NSW, three are only found in Victoria, and one is found in the northern part of NSW. Another species is found only in the sink holes in eastern South Australia and one in SW Australia. A second species is known from SWA but there was insufficient material available to describe it. One species, from Pulbeena Swamp, NW Tasmania, appears to have become extinct in recent times due to the draining of the swamp.

The reference is Ponder, W.F. & Avern, G. J., 2000. The Glacidorbidae (Mollusca: Gastropoda: Heterobranchia) of Australia. Records of the Australian Museum, 52:307-353.

From: **Winston Ponder**

SCIENCE ETHICS

POLICY: AN OATH FOR SCIENTISTS?

The debate over whether or not scientists, like doctors and many other professionals, should pledge adherence to a code of conduct continued in San Francisco at the annual meeting of the American Association forthe Advancement of Science (AAAS).

"Rather than trying to promote conformity we want to promote the capacityto say 'no'," said Gerard Toulouse, director of research at the ÉcoleNormale Supérieur in Paris. Toulouse urged for more "moral archaeology"into old oaths and their evolution to inform the debate. The idea of an oath for scientists has gained strength in recent years asthe pace of science has threatened to outstrip the speed at which itsethical implications are assimilated. But the idea is not a new one.

Motivated by their horror at the role of science in the Second World War,the physicists Albert Einstein and John Kendrew championed the notion inthe middle of the past century. But many fear that such vows enshrine a conformity that is incompatiblewith the creative freedom central to scientific discovery. Doctors vow notto abuse the power that they have over sick people. Scientists,

Toulouse proposes should be examining the power they have over "our sick planet andmaking a formal commitment to its care". He points out that the shaping of modern medical oaths inspired by the 2,500-year-old Hippocratic oath shows that "it can be done".

But Toulouse cautions that an oath makes sense only as part of a university ethics curriculum that leaves students free to choose whether (and what) to pledge. Irving A. Lerch, outgoing president of the AAAS' Committee on Scientific Freedom and Responsibility agrees: "Young people training to Be scientists need to receive a grounding in the humanities, to give them thekind of framework that will enable them to deal with these issues."

"History has shown that science and technology profoundly affects our values, but increasingly it must be shaped by those values" concurs Peter Blair, executive director of Sigma Xi, the US scientific research society.

An enforceable pledge, Blair feels would engender the kind of "debate and revision of values and circumstance that could help scientists work responsibly within what he calls the "changing ethical landscape". The Center for the Study of Ethics in the Professions (CSEP) at the Illinois Institute of Technology is doing some of the moral archaeology which Tolouse feels will be so instructive. They have collected, and made available online, an archive of more than 100 oaths from 22 countries andsix continents. "We want to see this issue being discussed in coffee rooms and committees," says Vivian Weil, director of the CSEP. "Something top-down is not the way to go," she says, believing individual institutions and societies are more likely to successfully institute codes of conduct than national governments. Indeed, about 15 oaths for scientists orengineers are currently proposed or in use.

Sara Abdulla

see also: the AAAS website <http://www.aaas.org/meetings/>

THE SNOWY RIVER PROJECT

The Snowy River: Historical variations in catchment sediment supply and within channel sediment storage and consequent channel changes

Background

The Snowy River Bench-Marking Project is an inter-disciplinary study which aims to quantify the current condition of the Snowy River from Jindabyne Dam to the Sea, and to then undertake flow response monitoring with the release of environmental flows.

The purpose of undertaking an inter-disciplinary study on flow response is:

- to guide the adaptive management of flow releases for both annual and longer term reviews; and
- to report back to community and government the responses of the river to environmental flows and why those responses occurred.

A limitation to understanding the current condition of the Snowy River is the limited understanding of changes to catchment condition over time and the influence of such changes on the habitat values and ecology of the river, in addition to changes in the flow regime.

Essentially the Benchmarking Project is concerned with measuring the quantity, diversity and quality of physical habitat that may be restored with an environmental flow release. As such, the focus is on the river channel, with the floodplain being of secondary significance. Broadscale catchment processes will, however, provide essential context and assist in considering or hypothesising how current sediment storage and transport in the river will respond to an environmental flow release. Assessing historical river channel changes in the context of a sediment budget framework and incorporating the hydrology of an environmental flow release will identify constraints on river response to increased flows and guide future catchment management.

Research Project

Questions

What are the historical catchment land use influences on current river channel condition?
What are the processes (spatial and temporal) that will influence recovery pathways and therefore best guide management of environmental flows and riverine works on the Snowy River?

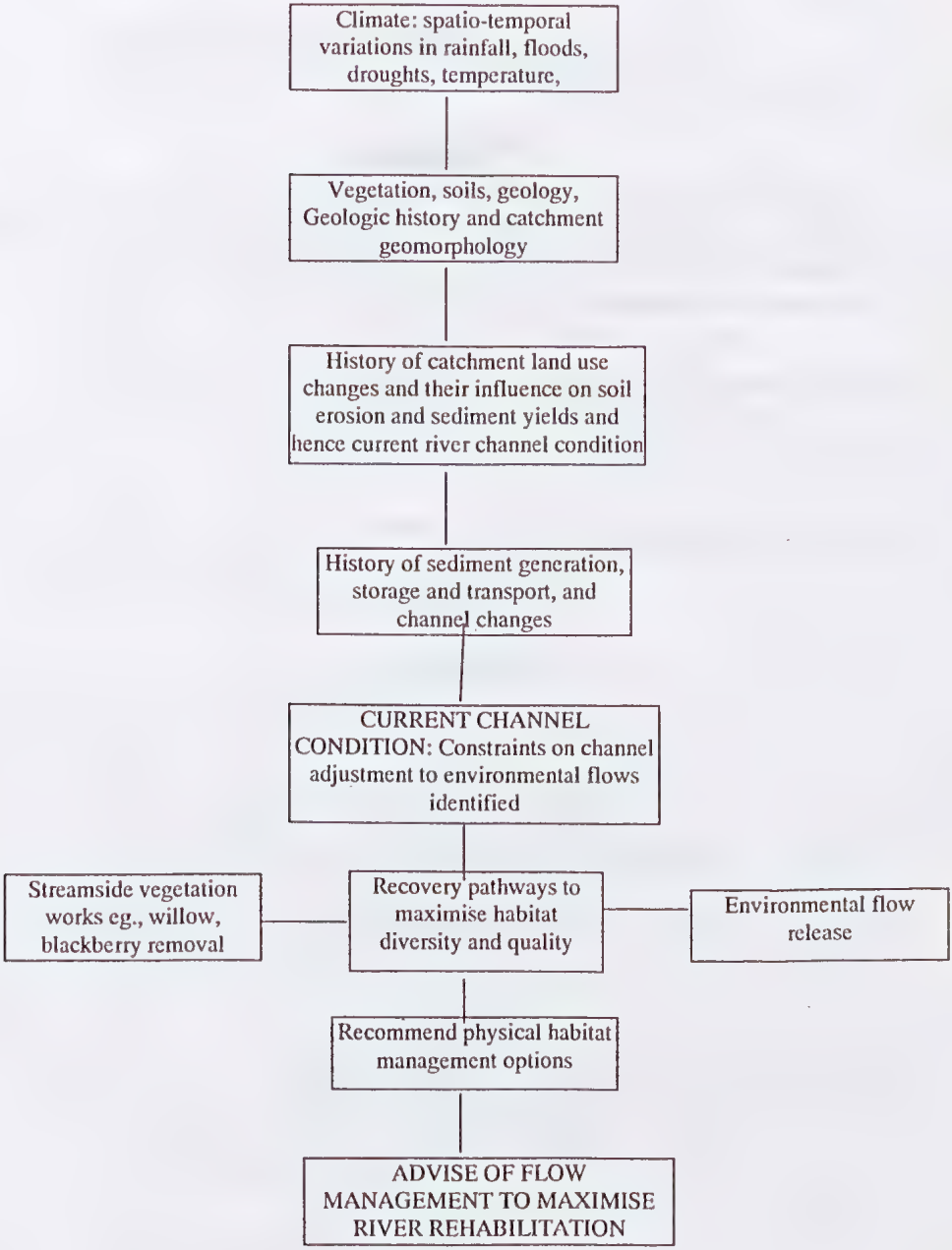
Aim

To advise on the constraints to habitat improvement as a consequence of sediment distribution and transport, and on future sediment management to improve aquatic habitat under a new environmental flow regime.

Objective

To determine channel recovery pathways that will maximise the diversity of aquatic habitat from an improved understanding of historical variations in sediment sources, fluxes and storages in the Snowy River catchment.

The Conceptual Model or framework for the study


Climate: spatio-temporal variations in rainfall, floods, droughts, temperature,
Vegetation, soils, geology, Geologic history and catchment geomorphology
History of catchment land use changes and their influence on soil erosion and sediment yields and hence current river channel condition
History of sediment generation, storage and transport, and channel changes
CURRENT CHANNEL CONDITION: Constraints on channel adjustment to environmental flows identified
Streamside vegetation works eg., willow, blackberry removal
Recovery pathways to maximise habitat diversity and quality
Environmental flow release
Recommend physical habitat management options
ADVISE OF FLOW MANAGEMENT TO MAXIMISE RIVER REHABILITATION

Application of conceptual model

- Track former and present sediment sources, fluxes and storages down the river system by sub catchment
- Hypothesise recovery

Scale

- Spatial: Headwaters to Tulloch Ard Gorge
- Temporal: Post European period

Assumptions

- Main sediment sources are upstream of Tulloch Ard gorge
- Drivers of post-European catchment change occurred in the period early after European settlement due to the interaction of land use changes with storms, floods, wildfires, flow regulation etc.
- Catchment erosional finale already in the past.

Funding

Some funding may be available to supplement scholarship funding.

For further information, contact:

Brett Miners (NSW Department of Land and Water Conservation) on 02 6452 1455 or Derek Rutherford (NSW EPA) on 02 6122 3100.

WORLD WATER DAY

Every year, 22 March is World Water Day. The theme for 2001 is: 'Water and Health'. The lead agency within the UN system will be the World Health Organization.

Background

The United Nations General Assembly adopted resolution A/RES/47/193 of 22 February 1993) by which 22 March of each year was declared World Day for Water, to be observed starting in 1993, in conformity with the recommendations of the United Nations Conference on Environment and Development contained in chapter 18 (Fresh Water Resources) of Agenda 21. States were invited to devote the Day, as appropriate in the national context, to concrete activities such as the promotion of public awareness through the publication and diffusion of documentaries and the organization of conferences, round tables, seminars and expositions related to the conservation and development of water resources and the implementation of the recommendations of Agenda 21.

In 2000, UNESCO was the lead agency. UNESCO, through the International Hydrological Programme (IHP) of the Division of Water Sciences, prepared a web site at the following address: http://www.unesco.org/science/waterday2000.

Objectives

World Water Day is pivotal to focusing attention on the need, among others, to:

address the problems relating to drinking water supply;
increase awareness about the importance of conservation, preservation, and protection of water resources and drinking water supply; and
increase governments, international agencies, non-governmental organisations, and private sector participation and cooperation in organisation of WWD celebrations.

Strategies

The following are suggested actions and activities that can be carried out at country level to develop awareness campaigns in countries by government and their partners. The partnership between governments, private sector, NGOs and professional organisations can be enhanced through their participation and collaboration in these events.

Promote mass media education programmes.
Focus on school children and youth.
Promote community and self-help programmes.
Increase public and private sector support, through collaboration and

participation in the celebrations.
Increase awareness of decision makers

The celebrations

For details about themes and public information activities around previous World Water Day visit our web site
2000: Water for the 21st Century
1999: Everyone Lives Downstream
1998: Groundwater - the Invisible Resource
1997: The World's Water: Is There Enough?
1996: Water for Thirsty Cities
1995: Women and Water
1994: Caring for our water resources is everyone's business

PROTECTION OF FRESHWATER BIODIVERSITY PAPER

FROM: JON NEVILL

For your interest, my paper examining the role of water management frameworks and processes in the protection of freshwater biodiversity is now finished (at 120 pages) and can be downloaded from
http://www.netspace.net.au/~jnevill/freshwater-a.htm .

The paper focuses primarily on two issues: the management of the cumulative effects of incremental water development, and the use of systems of representative freshwater reserves. The paper briefly overviews water management frameworks in Australian States.

The paper's recommendations, which are fairly short, can be accessed separately through the same link.

I would like to extend a special thankyou to all those who helped me with the paper.

I anticipate that hard copies will be produced in a relatively small print run, with the assistance of two sponsors. The main aim of the print run would be to service university libraries and water agency libraries, as well as local government.

8. Conclusions and recommendations

8.1 THE CURRENT SITUATION NEEDS URGENT REVIEW

To recapitulate: a number of important assumptions are underwriting the degradation of Australia's freshwater ecosystems. While all of these assumptions may well have once been correct, circumstances have changed over the last two centuries. Nine of the most important of these assumptions are listed above in section 2.5. While some of these assumptions have been successfully challenged by the current water reform agenda, others remain more-or-less unscathed. Australian water managers have been slow to adjust to changing circumstances.

Of the nine issues, I have argued that at least four need special attention:

- the completion of comprehensive freshwater ecosystem inventories, and the development of systems of representative freshwater reserves;
- managing the cumulative effects of incremental water infrastructure development (in line with sustainability principles);
- the integration of the management of surface and groundwaters, recognising that most Australian streams and rivers are fed primarily from surface groundwater; and
- a serious commitment to build quality assurance principles into water management processes.

This is not to say that issues such as environmental flows or fish passage are unimportant - they are very important. However, in my view, management processes around Australia are changing in response to these concerns. The four issues listed above are issues where management regimes have been particularly slow to respond to emerging needs.

The RFA program has at least established a system of terrestrial biodiversity reserves, and to this extent has gone a considerable way to meeting international and national commitments to protect terrestrial biodiversity. Fifteen percent of many important terrestrial ecosystems now lie in protected areas. However, the situation in the marine and freshwater environments is very different.

Here, little progress has been made. Most Australian States (Queensland is the exception) have less than 1% of their marine waters allocated to protected areas. And in the freshwater area, the few representative ecosystems with adequate protection lie within large terrestrial reserves, such as those in Tasmania's south-west World Heritage Area. The extent to which freshwater ecosystems encompassed in large terrestrial reserves meet CAR criteria has simply not been assessed in any Australian State.

No Australian State has established reserves specifically to protect representative freshwater ecosystems, in spite of international and national commitments dating as far back as 1982, and in spite of commitments in the form of policy statements by Victoria, Western Australia, Queensland, the Northern Territory and New South Wales. Victoria is to some extent an exception, as it is the only State to fund a program designed to put in place representative freshwater reserves, but this program (initiated by the 1987 State Conservation Strategy, and commenced in 1988) did not achieve its objective of establishing a comprehensive system of representative reserves encompassing both still and flowing freshwater ecosystems (rivers and wetlands). However the framework established by the program does include fifteen Representative Rivers, and this framework could now be extended (given sufficient interest by the Victorian government) to establish a comprehensive and representative system.

While the limited Victorian reserves do not appear to be either comprehensive nor adequate (in the sense of providing coverage of representative types in all IBRA regions) the situation in most other States is that State governments have not adequately funded programs to implement even the limited commitments of the Ramsar convention (or the national biodiversity strategy) with respect to the establishment of comprehensive freshwater ecosystem inventories. All Australian States have developed wetland inventories, but even these, in all cases, are incomplete or inadequate when assessed by Ramsar criteria.

In the absence of this information, infrastructure assessment programs, looking (as they do) at discrete infrastructure proposals on a case by case basis (rather than taking a regional overview within a strategic planning context) will never be able to adequately protect freshwater biodiversity. Only State-wide strategies, based on comprehensive inventories, and including systems of representative freshwater reserves within each IBRA region, can be effective. Such strategies, where basin catchments cross State borders, need to be consistent across the whole basin.

Cumulative effects, the integration of the management of groundwater and surface water, and the principles of quality assurance - all need to be addressed within the processes and programs of integrated catchment management. This is currently not happening anywhere in Australia - with a few notable exceptions, mostly in New South Wales.

8.2 WHAT NEEDS TO BE DONE?

8.2.1 Inventories and representative reserves

As set out above, Australia (and of course each of Australia's constituent States) is committed to the concept of representative freshwater reserves at international and national levels. Moreover, Victoria, Western Australia, Queensland, the Northern Territory and New South Wales are committed by way of State strategies to develop systems of representative freshwater reserves.

However, these commitments are not being implemented in any focused way, in any State. Victoria has the most "advanced" framework, but even here the matter of freshwater reserves needs urgent revision. New South Wales began investigation of a freshwater reserves system, but the program has apparently been shelved for the moment. This may be revived by the soon-to-be released draft aquatic biodiversity strategy. Nevertheless, biodiversity surveys that will lead to a better freshwater inventory are progressing. Queensland is currently considering the development of a possible

Rivers Policy which may carry the freshwater reserves concept. Western Australia and Tasmania are presently developing State biodiversity strategies, and Tasmania and South Australia (somewhat belatedly) are developing State wetlands strategies. These strategies could address the issue of representative reserves.

Policy commitments are one thing; putting a system of representative reserves in place, however, requires political commitment and funding.

Frameworks for the protection of freshwater ecosystems must, as Principle 8 of the national biodiversity strategy states, encompass both reserves and sympathetic management of remaining ecosystems. Additionally, reserves must extend beyond CAR reserves to encompass special-purpose freshwater reserves. Although a great deal has already been achieved in the establishment of existing wetland reserves, many important freshwater sites remain without adequate protection. Many of the values of freshwater systems can be protected to some degree by managing catchment and riparian condition, and protecting water flow and quality. However, some important site-specific natural values cannot be given adequate protection by these means, and consequently these areas need reserve status, coupled with specific management plans, to protect their important natural values.

Importantly, water flow and quality controls alone will not ensure fish passage, and are unlikely to protect the full suite of aquatic ecosystem values in the face of the incremental growth of small dams, bores and levee banks within catchments subject to vigorous human demand for water for agricultural, industrial and urban use.

Every Australian State should establish a system of comprehensive, adequate and representative freshwater reserves. In part, this will involve establishing "free flowing" rivers and streams. These reserves will not only protect the biodiversity of important representative ecosystems, but will provide benchmarks against which we can judge the effectiveness of our river management programs in other areas.

The first step to developing such a system of freshwater reserves has already been taken. All Australian States have wetland inventories, although (to a greater or lesser extent) these inventories remain unfinished. Many of these wetlands already have reserve status. The most urgent "next step" is to review and extend these inventories. Firstly, the review should be targeted at assessing the extent to which existing reserves provide a 'comprehensive, adequate and representative freshwater reserve system' - using the best data to hand. Such State reviews should use an agreed national classification method, and should aim to identify gaps, and provisionally select reserves to fill these gaps.

Secondly - again as a matter of urgency - existing inventories should be extended to encompass wetlands, rivers and streams, and aquifers. The development of comprehensive freshwater ecosystem inventories must, of course, include classifications to allow the selection of "representative types", and should also include condition indices and monitoring programs. As discussed above, there is a need to extend current work on ISC and ARC indices relating to stream condition to cover wetland and aquifer ecosystems.

Such inventories can then form the basis for the full development of systems of CAR freshwater reserves, and strategic conservation programs relating to infrastructure assessment regimes capable of managing the cumulative effects of incremental water infrastructure development.

As outlined above, the Commonwealth and several State governments have already made policy commitments to establish systems of representative freshwater reserves. These commitments

should now be backed by funded programs to establish agreed procedures, and to identify and select representative reserves.

8.2.2 Cumulative effects

The only way to manage cumulative effects is to develop strategic limits on development, using sub-catchment, catchment and basin frameworks. This must be done using a precautionary approach, and it must be done well ahead of the emergence of serious environmental problems - otherwise the human dimension of the ensuing problems becomes politically unmanageable. This is the opposite of the current situation, where caps are only considered in 'highly stressed' catchments.

The obvious framework for setting caps already exists: integrated catchment management. While States must provide clear, strong guidelines, stakeholder involvement and consultation is absolutely essential. States must also provide a statutory framework where catchment plans have a clear, important and effective role. Catchment plans developed on the basis of motherhood action statements and goodwill will not be effective.

The framework must also consider issue of equity for those seriously disadvantaged - for instance by the wind-back of water allocations to provide environmental flows. In some cases, compensation must be paid.

8.2.3 Integrated management of surface and groundwater

State governments have been, and to a large extent still are, managing groundwater and surface water as two separate resources. In some cases this is a reasonable assumption, especially when groundwater is confined deep underground, as is generally the case with the Great Artesian Basin. However, in most cases this assumption is simply not correct, as groundwater and surface flows are often inextricably and very directly linked. Australian rivers (unlike rivers of the Himalayas, which are fed by snowmelt, or rivers of southern New Zealand, which are fed by rainfall and snowmelt) most of the time, feed on surface groundwater. Yet the two aspects of the one resource have been, until very recently, managed by separate policies and programs, and sometimes even by different State agencies using different pieces of legislation. Fragmentation of the management of the resource in this way can only exacerbate the effects of the tyranny of small decisions, a powerful mechanism leading towards resource degradation and over-exploitation.

State water agencies must manage groundwater and surface water in a unified way. Water management plans, and water allocation plans, must be made with respect to the whole resource. Groundwater environmental flows must be taken into account using a precautionary approach. Aquifer condition assessment techniques must be developed, along the lines of those now in place for river assessment.

8.2.4 Compliance audit and enforcement programs

No system of resource management will be effective unless it is implemented, enforced as necessary, audited and reviewed. These are standard quality assurance techniques, built into internationally accepted standards such as the ISO 9000 (quality assurance) and ISO 14,000 series (EMS).

It is essential that programs be designed, and budgets provided, to audit and enforce controls. A situation where a farmer sees his neighbour build a substantial dam without the required approvals, and the State takes no effective action, undermines the entire water management regime. Under such conditions, cumulative effects become impossible to control.

8.2.5 Action by the Commonwealth

As discussed above, management of natural resources is - under the Australian Constitution - the province of the States, and the Commonwealth's means of influence is largely through the allocation of funding, as well as cooperative programs developed through consultative mechanisms like ANZECC and ARMCANZ. The Land and Water Resources Research and Development Corporation, the National Land and Water Resources Audit, the National Rivers Consortium, the

Wetlands Program, and the Healthy Rivers Program are five freshwater programs within this latter category.

Bearing this in mind, and in light of the above discussion, the Commonwealth could take the lead with roughly sequential steps:

- The National Reserve System program could identify the issue for priority funding;
- The Land and Water Resources Research and Development Corporation, in conjunction with the National Land and Water Resources Audit, the National Wetlands Program and the Australian Biological Resources Study could fund a study (under a Commonwealth / State steering committee) to establish agreed classification methods for establishing major freshwater ecosystems types (and for measuring and reporting value). Such a project may also need to consider, as a first step, expanding or adapting the IBRA regionalisation framework (which is primarily designed around terrestrial ecosystems) to produce a regionalisation framework focused on freshwater ecosystems. Once those steps were underway;
- The National Reserve System program, and the National Wetlands program, could earmark NHT funding for States to develop comprehensive freshwater inventories as a basis for the establishment of identification, selection and establishment of representative freshwater reserves;
- The National Water Quality Management Strategy could, at the request of the National Rivers Consortium, expand its current "Implementation Guidelines" on ICM planning to incorporate the protection of biodiversity values into ICM plans. The Implementation Guidelines also need amendment to provide better focus on the management of cumulative effects;
- COAG water reform funding could be supplemented and/or earmarked to encourage the incorporation of biodiversity concerns into ICM plans, using the revised guidelines.
- The National River Health Program, in conjunction with the National Reserves System Program, and the National Wetland Program could allocate funding to assist States identify and select representative freshwater reserves, using the expanded inventories and revised methodology discussed above;
- The Land and Water Resources Research and Development Corporation and the National Wetlands Program could fund a second phase of the National Wetland Research and Development Program, focussing on improving on-ground wetland management for public and private wetland reserves;
- Management guidelines to address the difficult boundary issues involved in managing river reserves could also be examined by a project funded by LWRRDC, the Audit, or the National Rivers Consortium. National guidelines in these areas would assist in the development of management plans for representative reserves covering rivers in particular, although wetland and aquifer reserves also suffer from the impacts of land and water use within their catchments, well outside the actual boundaries of the reserves; and
- the National River Health Program could direct funding previously applied to determining river health to the question of aquifer health. This would be compatible with its objectives (see above).

8.2.6 Action by the States

At the State level, the most pressing concerns are:

- States should support and encourage the Commonwealth government to supply coordination and funding in the areas listed above;

- Existing wetland inventories should be expanded to include rivers, streams and aquifers, and resources should be allocated to support the joint Commonwealth/State classification methodology study suggested above;
- Groundwater and surface waters, when part of a connected resource, must be managed in a coordinated and coherent way, with water allocation and management plans taking account of both surface and groundwater stocks, flows, usage, threats and qualities;
- The States, through the National Rivers Consortium, should initiate the development of aquifer health assessment techniques. An Index of Stream Condition (ISC), developed in Victoria, is now being used in other States (discussed above), and is being extended by a current Audit project (discussed above). As part of the development of comprehensive ecosystem inventories, consideration should be given to developing similar indices for wetlands and aquifers;
- Discussions should be initiated in relation to expanding the current river environmental flow program to include groundwater environmental flows;
- Integrated catchment management programs should be modified to incorporate sustainability principles. With respect to the precautionary principle, this will involve managing cumulative effects by setting development caps on a catchment-by-catchment basis, within State and basin strategic frameworks - and well ahead of serious environmental problems;
- Integrated catchment management programs should be modified to incorporate sustainability principles. With respect to the principal of quality assurance, this will involve upgraded compliance audits and enforcement programs. For example, all States should audit and remove illegal dams; and
- Information on inventories, monitoring programs, and compliance and enforcement audits should be made readily accessible to all those involved with (a) water infrastructure environmental impact assessment, and (b) catchment planning.

8.2.7 Fish passage and environmental assessment:

While this paper has focused on four key issues, there are two key issues which the paper has not discussed.

The first is fish passage. Many native fish undertake life-cycle journeys taking them from the estuaries at river mouths to the headwaters of these rivers. The construction of dams and weirs, generally speaking, makes these journeys difficult or impossible. Considerable advances have been made in the development of fishways in recent years; however this knowledge is generally not being widely applied (see Table 6.1 above). And fishways currently don't help fish travelling downstream over dam spillways. There is an urgent need to apply existing knowledge to facilitate fish passage, both through the construction of fish passes in dams and weirs of all sizes, and in simply removing unnecessary weirs. New dams, of all sizes, should be placed off-stream wherever possible, acknowledging the much higher construction costs involved. Compliance issues are also involved: on-stream farm dams are almost impossible to police with respect to allowed levels of water harvesting, while compliance enforcement is at least feasible in regard to off-stream dams.

The second issue relates to the environmental assessment processes applicable to large dams. Environmental impact assessments are traditionally confined to the direct effects of the dams themselves. There is an urgent need to extend assessments of large agricultural dams to encompass the long-term direct and indirect effects of both the dams and the irrigation proposals which the dams depend on for their financial viability.[1] It should be noted that the 15% target of the RFA has been focused on forest ecosystems, rather than applied more generally to terrestrial ecosystems. Of Australia's 80 IBRA regions, only 28 have more than 10% of their area protected by reservation, and 23 have less than 2% protected. (O'May 1999).

How to Write a Scientific Paper

E. Robert Schulman
Charlottesville, Virginia

Abstract

We (meaning I) present observations on the scientific publishing process which (meaning that) are important and timely in that unless I have more published papers soon, I will never get another job. These observations are consistent with the theory that it is difficult to do good science, write good scientific papers, and have enough publications to get future jobs.

1. Introduction

Scientific papers (e.g., Schulman 1988; Schulman & Fomalont 1992; Schulman, Bregman, & Roberts 1994; Schulman & Bregman 1995; Schulman 1996) are an important--though poorly understood--method of publication. They are important because without them scientists cannot get money from the government or from universities. They are poorly understood because they are not written very well (see, for example, Schulman 1995 and selected references therein). An excellent example of the latter phenomenon occurs in most introductions, which are supposed to introduce the reader to the subject so that the paper will be comprehensible even if the reader has not done any work in the field.

The real purpose of introductions, of course, is to cite your own work (e.g., Schulman et al. 1993a), the work of your adviser (e.g., Bregman, Schulman, & Tomisaka 1995), the work of your spouse (e.g., Cox, Schulman, & Bregman 1993), the work of a friend from college (e.g., Taylor, Morris, & Schulman 1993), or even the work of someone you've never met, as long as your name happens to be on the paper (e.g., Richmond et al. 1994). Note that these citations should not be limited to refereed journal articles (e.g., Collura et al. 1994), but should also include conference proceedings (e.g., Schulman et al. 1993b), and other published or unpublished work (e.g., Schulman 1990).

At the end of the introduction you must summarise the paper by reciting the section headings. In this paper, we discuss scientific research (section 2), scientific writing (section 3), scientific publication (section 4), and draw some conclusions (section 5).

2. Scientific Research

The purpose of science is to get paid for doing fun stuff (Schulman et al. 1991). Nominally, science involves discovering something new about the Universe, but this isn't really necessary. What is really necessary is a grant. In order to obtain a grant, your application must state that the research will discover something incredibly fundamental. The grant agency must also believe that you are the best person to do this particular research, so you should cite yourself both early (Schulman 1994) and often (Schulman et al. 1993c). Feel free to cite other papers as well (e.g., Blakeslee et al. 1993; Levine et al. 1993), so long as you are on the author list.

Once you get the grant, your university, company, or government agency will immediately take 30 to 70% of it so that they can heat the building, pay for Internet connections, and purchase large yachts.

Now it's time for the actual research. You will quickly find out that (a) your project is not as simple as you thought it would be and (b) you can't actually solve the problem. However -- and this is very important -- you must publish anyway (Schulman & Bregman 1994).

3. Scientific Writing

You've spent years on a project and have finally discovered that you can't solve the problem you set out to solve. Nonetheless, you have a responsibility to present your research to the scientific community (Schulman et al. 1993d). Be aware that negative results can be just as important as positive results, and also that if you don't publish enough you'll never be able to stay in science.

While writing a scientific paper, the most important thing to remember is that the word "which" should almost never be used. Be sure to spend at least 50% of your time (i.e., 12 hours a day) typesetting the paper so that all the tables look nice (Schulman & Bregman 1992).

4. Scientific Publishing

You've written the paper, and now it's time to submit it to a scientific journal. The journal editor will pick the referee most likely to be offended by your paper, because then at least the referee will read it and get a report back within the lifetime of the editor. Referees who don't care one way or the other about a paper have a tendency to leave manuscripts under a growing pile of paper until the floor collapses, killing the 27 English graduate students who share the office below (Schulman, Cox, & Williams 1993).

Be aware that every scientific paper contains serious errors. If your errors are not caught before publication, you'll eventually have to write an erratum to the paper explaining (a) how and why you messed up and (b) that even though your experimental results are now totally different, your conclusions need not be changed. Errata can be good for your career. They are easy to write, and the convention is to reference them as if they were real papers, leading the casual reader--and perhaps also the Science Citation Index--to think that you've published more papers than you really have (Schulman et al. 1994).

5. Conclusions

The conclusion section is very easy to write: all you have to do is to take your abstract and change the tense from present to past. It's considered good form to mention at least one relevant theory only in the abstract and conclusion. By doing this, you don't have to say why your experiment does (or does not) agree with the theory, you merely have to state that it does (or does not).

We (meaning I) presented observations on the scientific publishing process which (meaning that) are important and timely in that unless I have more published papers soon, I will never get another job. These observations are consistent with the theory that it is difficult to do good science, write good scientific papers, and have enough publications to get future jobs.

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ANNOUNCEMENTS

This article kindly supplied by Andrew Boulton

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Dr. Hans Jürgen Hahn

Landau, den 13.03.2001

Stellenausschreibung/Vacant Position

For comparing different methods of sampling stygofauna in fractured rock and alluvial aquifers, the Institute of Biology, University of Landau (near Heidelberg SW Germany) seeks a limnologist for a one year position (Salary: DM 30.000 p.a.). Knowledge of German language required.

Einer der Arbeitsschwerpunkte des Institutes für Biologie, Universität Landau (Südwestdeutschland, nahe Heidelberg) ist die Untersuchung von Grundwasser-Oberflächenwasser-Wechselwirkungen.
Im Rahmen des DFG-Projektes "**Vergleich der Grundwasserfauna in Lockergesteins- und in Kluft-grundwasserleitern unter vergleichender Anwendung unterschiedlicher Sammeltechniken**"

ist ab 1. April 2001 eine auf zunächst 1 Jahr befristete Stelle zu besetzen.

Für das Grundwasser, den größten Lebensraum Mitteleuropas, gibt es nur unzureichende Angaben über Verbreitung und Ökologie der dort lebenden, hochangepaßten und artenreichen Tierwelt. Standardisierte Methoden zur Besammlung der Grundwasserfauna exisitieren bislang nicht.

Ziel dieses Vorhabens ist es, die Grundwasserfauna von Lockergesteinsgrundwasserleitern mit derjenigen von Kluftgesteinsaquiferen zu vergleichen, wobei drei unterschiedliche Sammelmethoden parallel und vergleichend zur Anwendung kommen werden.

Die Untersuchungen sind zunächst auf 12 Monate beschränkt und können monatlich mit DM 2.440.- brutto vergütet werden. Fahrtkosten werden erstattet.

Eine Ausweitung der Studie zu einem bezahlten Promotionsvorhaben wird angestrebt. Eine Entscheidung darüber wird in den kommenden drei Monaten fallen.

Voraussetzung für eine Bewerbung ist ein erfolgreich abgeschlossenes Hochschulstudium im Fach Biologie mit Schwerpunkt Limnologie. Der/die Bearbeiter/in sollte Erfahrung mit der Bestimmung von Kleinkrebsen haben und über ein eigenes Fahrzeug verfügen. Eigenständiges Arbeiten, insbesondere Abstimmung mit Wasserwirtschafts- und Forstverwaltung, wird vorausgesetzt.

Kenntisse der deutschen Sprache sind erforderlich.

Nähere Auskünfte zu dieser Stelle erteilt Ihnen:

Herr Dr. Hans Jürgen Hahn, Tel: 0049 (0) 6341/280-211 oder 280-143, email: hjhahn@uni-landau.de
Aussagekräftige Bewerbungen richten Sie bitte bis zum 28. Februar 2001 an das Institut für Biologie, z. Hd. Herrn Dr. Hans Jürgen Hahn, Im Fort 7, D - 76829 Landau, Deutschland

3RD AUSTRALIAN ALGAL WORKSHOP

FIRST CIRCULAR

3rd Australian Algal Workshop

23-25, July 2001

QUEENSLAND HEALTH SCIENTIFIC SERVICES
COOPERS PLAINS, BRISBANE

WORKSHOP OVERVIEW

The 3rd Australian Algal Workshop will be held in Brisbane, at the Queensland Health Scientific Services Coopers Plains Campus, July 23-25, 2001, to coincide with the Fifth International Conference on Toxic Cyanobacteria, being held the week before in Noosa, ca. 150 km north of Brisbane. The workshop continues the theme of presenting taxonomic works exploring the Australian algal flora, with this year's program covering both the Chlorophyta and Cyanoprokaryota. The workshop will focus on both the theoretical and practical aspects of algal taxonomy by including lecture presentations by Australian and overseas algal specialists as well as interactive laboratory sessions. Due to popular demand the "participants unknown material session" will again be included in the program. The workshop continues to provide a forum for specialist and workers in the field cf phycology to meet in a relaxed and co-operative environment to discuss developments in contemporary Australian algological studies.

WORKSHOP PRESENTERS

Dr Tim Entwistle, Royal Botanic Gardens Sydney

Tim will be providing the introductory framework for the workshop by presenting an overview of the taxonomic features of the major freshwater algal groups. He will also provide an overview of algal taxonomic knowledge in Australia, and discuss the taxonomic issues yet to be resolved.

Ms Belinda Turner, National Association of Testing Authorities (NATA)

Belinda will provide an overview of the NATA Australian Algal Accreditation Program, the history of its development, and planned extension of the program to cover an expanded range of algal analytical services.

Dr Kumar Eliezer, Australian Water Technologies

Kumar will be presenting a series of lectures and a "hands on" laboratory session on the identification and taxonomy of the freshwater Chlorophyta.

Mr Glenn McGregor, Queensland Department of Natural Resources
Dr Larelle Fabbro, Central Queensland University

Glenn and Larelle will present "A Preliminary Guide to the Identification of Australian Freshwater Planktic Chroococcales (Cyanoprokaryota)". This newly prepared key and identification guide funded by Land and Water Australia covers the commonly encountered planktic Chroococcales species.

To register your interest in attending the workshop and to receive registration details please notify the workshop organising committee via email at algalworkshop@dnr.qld.gov.au

Workshop Convenors:

Glenn McGregor
Qld Department of Natural Resources
Phone: (07) 3848 8196

Maree Smith
Queensland Health Scientific Services
Phone: (07) 3274 9090

The 3rd Australian Algal Workshop is proudly supported by:

Queensland Government Department of Natural Resources

Land & Water Australia

Murray-Darling Basin Commission

Central Queensland University

Queensland Health Scientific Services Queensland Government

JOB ADVERT

MANAGER, Wetlands International - Oceania, Canberra
$58-63 K (full-time basis)

Wetlands International, an NGO engaged in wetland research and conservation, is seeking a Manager for its operations in Oceania. It requires strategic, innovative leadership and sound management of current projects that include migratory shorebirds, support to the Ramsar Convention, training in developing countries, community-based reef conservation and arid-zone wetland inventory. From Canberra the Manager will oversee a small team of technical officers in Australia and the Pacific Islands region. Travel in Asia Pacific will be required. Position to start on part-time basis, subject to review after six months, but intended as long-term and full-time dependent on fund-raising success.

REQUIREMENTS: Demonstrated skills in management of staff and resources, fund-raising and proposal preparation. Capability in writing of technical reports. Scientific qualifications and experience in wetlands field, highly desirable. Ability to work in cross-cultural situations, in NGO context; and with externally-located personnel.
Selection Criteria and details are viewable at http://ngo.asiapac.net/wetlands/curvac.htm

CONTACT: Send expression of interest (one page) with concise CV by email or fax to Roger Jaensch (roger.jaensch@env.qld.gov.au fax 07-3896-9624). For further information call Roger on 07-3406-6047.

40TH ASL CONGRESS 2001

27th September – 1st October 2001

Registration will start in the evening of Thursday, 27th September

Rich River Golf Club Resort, Moama, NSW
(near Echuca, Vic)

First Announcement

Deadline for Abstracts:
Postal deadline: Received by 16th July,
Electronic deadline: Received by 1.August

A special flyer with full information on registration, accommodation, instructions for abstract submisssions will be sent out in early May.

Early bird Registration: before 1st August 2001

Check the next ASL newsletter or the ASL homepage at www.asl.org.au for more details and updates.

Call for Expression of Interest

Special Sessions

(Grouping of papers on themes)

Deadline for Proposals: 6th April 2001

We welcome any suggestions for topics for special sessions. If you are interested chairing and organising such sessions please contact the organisers by the 6th April 2001.

Contact Details:
Conference Program Organisers:
Mike Grace (mike.grace@sci.monash.edu.au)
Michael Shirley (mshirley@skm.com.au)
Sabine Schreiber (sabine@unimelb.edu.au)

Student Travel Awards
Application Deadline: 1. August 2001

Applications are invited from research students for travel assistance to attend and present a paper at the Annual Congress of the Australian Society for Limnology. The purpose of this assistance is to encourage students to present the results of their work in public. Students who are carrying out research in any branch of limnology for a higher degree are encouraged to apply. The following rules apply for assistance:

1. Applicants must be full-time postgraduate students at any Australian University, College of Advanced Education or Institute of Technology. There is no age limitation. Applicants must have current financial membership of the ASL for at least 6 months.

2. Assistance will be granted on the recommendation of a panel of three appointed by the Society.

3. Applications must include a written statement of no more than 200 words describing the research, its significance and the stage that has been reached. This statement must be endorsed by the student's supervisor. An abstract of the paper that the applicant proposes to present must also be included.

4. Award of assistance will be judged on: (I) significance of the work; (ii) originality and soundness of the research; (iii) the progress made and whether the stage has been reached where something useful can be presented; (iv) ability to present a clear and concise statement of the study.

5. Applicants must be lodged with Dr Richard Marchant, Museum of Victoria, GPO Box 666E, Melbourne 3001, by 1.August 2001.

STUDENT PRIZES

At the Annual Congress, there are three student prizes of books (chosen by the recipient) to the value of $100. The prizes are:

1. Prize for the best oral presentation by a Ph.D. or Masters student.

2. Prize for the best poster presentation by a student.

3. Prize for the best oral presentation by an Honours student.

Posters are assessed during the dedicated poster session and must be attended by the author, who will explain the presentation and field questions. There will be no oral sessions concurrent with the poster session.

The Honours prize was felt desirable because for a number of years members have felt that recent Honours graduates are less experienced at oral presentations and are therefore disadvantaged compared with other graduate students who have nearly completed their research. We hope this prize will encourage recent Honours graduates to attend Congresses and share their results with other members of ASL.

To be eligible for a student prize, students should be current, financial members of ASL, and must give their presentation within 18 months of receiving their degree. The student prizes will be judged by a committee or committees convened by the ASL Executive at the next ASL Congress. Wherever possible, such committees will not contain supervisors or Co-authors of candidates for the prizes.

Additionally, a student can win each of the awards only once. Thus a student who has won the PhD award is no longer eligible for that award but would be eligible to submit a poster for the poster award. A student who has won the honours award would still be eligible for each of the other award.

AUSTRALIAN WETLAND FORUM

Supported by ASL, Society for Wetland Scientists (Australian Chapter) and Wetland Care Australia

Thursday 27th September 2001

Registration will commence on Wednesday 26th September 2001

Rich River Golf Club Resort, Moama, NSW
(near Echuca, Vic)

First Announcement

Further details will be forthcoming!

CONFERENCE CAPERS

OVERSEAS

WATERSHED 2002
WATERSHED 2002 CALL FOR ABSTRACTS: WYNDHAM RESORT & SPA; FORT LAUDERDALE, FLORIDA, USA, 23-27 FEBRUARY 2002. ABSTRACT SUBMITTAL DEADLINE: 26 APRIL 2001 Please mail your Abstract and Abstract Submittal Form to:
Technical Programs - WATERSHED 2002 Abstracts
Water Environment Federation
601 Wythe Street
Alexandria, VA 22314-1994 USA
P: 703.684.2442
F: 703.684.241

The **CHEMICAL OCEANOGRAPHY** GORDON CONFERENCE is taking place this summer from August 12-17, 2001 at Tilton School, Tilton, NH. Check out theGordon Conference web site to see the program as it stands presently and find information about registration

"Plankton Symposium" in Espinho, Portugal. (20, 21 and 22 of September, 2001) the symposium web site at www.plankton-symposium.net has been updated with more detailed information concerning abstract and paper submission and instructions for authors, agenda and registration. E-mail: planktonsymposium2001@net.sapo.pt

25th **Annual Larval Fish Conference**, August 8-13, 2001 The National Marine Fisheries Service's Howard Laboratory on Sandy Hook,New Jersey, USA, is pleased to host the 25th Annual Larval Fish Conferencefrom August 8 through 13, 2001. http://www.sh.nmfs.gov/lfc2001.html

River Basin Management 2001, 11 - 13 September 2001, Cardiff, Wales, The deadline for final papers is 8 May 2001, see http://www.wessex.ac.uk/conferences/2001/river01/

10th **International Conference on Rainwater Catchment Systems** A conference within **Rainwater International** 2001. In conjunction with The International Rainwater Fair and The Forum: Rainwater Harvesting in Practice Date: 10 - 14 September 2001 Location: Mannheim, Germany up-to date-information at www.rainwaterconference.org.

THE 8th **INTERNATIONAL WATERFOWL AND WETLANDS SYMPOSIUM** will be held inWashington D. C. 20 - 22 July, 2001.. For further information on the scientific programor other details contact BRENDA CARLSON (bcarlson@ducks.org) Additional symposium and registration information will be available at www.ducks.org.

WATER RESOURCES MANAGEMENT 24 - 26 September 2001, Halkidiki, Greece FOR THE LATEST CONFERENCE INFORMATION VISITOUR WEB SITE AT:http://www.wessex.ac.uk/conferences/2001/wrm01/

International Congress on **Invertebrate Reproduction and Development** 15-20 July 2001 9th: Rhodes. University, Grahamstown, South Africa. Inquires Alan Hodgson, Rhodes University 6140 South Africa ph (+46) 6038526 fax (+46) 6224377.

Seventh International Phycological Congress: August 2001 Thessaloniki in north-eastern Greece. For more details, visit our website at: http://dictyocha.bio.auth.gr/7ipc2001 or try http://www.seaweed.ie/phycologia

29th International Association of Theoretical and Applied Limnology August, 2004. (SIL): Helsinki, Finland.

AUSTRALIAN

The **MODSIM 2001** Congress will be held on 10-13 December 2001 at ANU, Canberra. The conference web address is http://cres.anu.edu.au/~tony/modsim2001.htm

ASPAB 2001 http://www.bigfoot.com/~aspab_31 August to 2nd September, 2001, Heron island, Qld, Contact Philip Orr, ASPAB Vice-President, Chairman of the 16th ASPABConference Organising Committee

WA STATE LANDCARE CONFERENCE 2001 September 12th to 14th 2001. The web site for the conference is: http://www.avonicm.org.au/avonicm/lcconference

I'VE BEEN TO .....

Report on the Fourth International Large Branchiopod Conference, January 23-27, 2001, La Paz, Mexico

About 60 scientists from Austria, Belgium, Germany, Italy, Spain, Algeria, USA, Mexico, Brazil, Argentina, Japan, Thailand, India and Australia met recently in the Hotel Los Arcos, La Paz, the capital of Baja California Sur. The conference was organised by Alejandro Maeda-Martinez and Gopal Murugan of CIBNOR (Centro de Investigaciones Biologicas del Noreste, S.C), a major research institution mainly into aquaculture, but also into the environment assessment.

On the first day following an official welcome and opening, Professor Henri Dumont of University of Gent gave the Opening Address reviewing a decade of research on the Anostraca. He bought to our attention exciting developments in phylogeny, and on progress in understanding dormancy and hatching, particularly in *Artemia*. On the other hand the early promise of ootaxonomy, ie. the identification of species based on collection of cysts requiring 'no more than just dry mud' has proved disappointing. The remainder of the day was spent touring the impressive facilities of nearby CIBNOR, a late but long welcome lunch as only the Mexicans can do, and finally a futile discussion on formalising a society.

The next day saw the first of three days of contributed papers ranging from anatomy, biochemistry, biogeography, conservation, ecology, genetics, molecular biology, phylogeny, taxonomy of fairy shrimps, clam shrimps and shield shrimps and to many papers on culturing, particularly on *Artemia*. Proceedings were somewhat leisurely (cf SIL in Melbourne!) and there was plenty of time for viewing and discussing the many poster papers. Australian papers included two on the diversity and ecology of anostracans and conchostracans of the Paroo (Brian Timms), and two on conservation issues associated with mining and with salinisation in Western Australia (Brenton Knott and Alan Savage).

To my biased thinking, the standout papers were one by Luc Brendonck reminding us that temporary pools are indeed not predator-free, another by Stefan Richter who used the ultrastructure of conchostracan eyes to construct a phylogeny, and the last one by Clay Sassaman on the need to rethink conservation stratigies for *Branchinecta* in USA. Of course one cannot forget the distinctly sexy papers on how male fairy shrimps grab females for mating (by Christopher Rogers) and on the use of male genitalia in distinguishing among Artemia species (by Laura Torrentera).

Then followed a day in the field driving around the mountainous desert at the southern tip of Baja California looking at fairy shrimp habitat. The day was memorable equally for the lack of surface water and hence wonderful shrimps and the abundance of fossil groundwater being used to sustain golf courses and gardens of luxurious seaside hotels catering for wealthy North Americans.

Of course, as at all conferences, much value was derived from informal contacts with other workers of similar interests. Particularly memorable were the evenings as groups dined at various restuarants along the waterfront in La Paz. What a contrast this authentic Mexican town made with the ritzy Americanised resorts to the south. The meeting was highly successful due to the venue, the organisers and the participants. Perhaps those who wanted the establishment of a formal society shouldn't be too disappointed --- conferences such as this one are productive because they are small and relatively informal. Look for proceedings in a forthcoming issue of *Hydrobiologia*.

BY: BRIAN TIMMS

ASL VOLUNTEERS

The following people have volunteered to speak as experts on behalf of the ASL. If you wish to be included on the list contact:

Dr Richard Marchant (ASL Secretary)
Email: rmarch@pioneer.mov.vic.gov.au

Prof A. Arthington:
in stream flows, ecology of exotic fishes, conservation of rare fishes.
Centre for Catchment & Instream Res, Griffith University, Natham Qld. 4111. Phone (07)275 7403 , Fax: (07)277 3759

Dr P. Boon:
bacteriological issues, wetlands.
Environmental Management, Victoria University of Tech., PO Box 14428 MMC, Vic. 3000. Phone (03)9365 2214, Fax (03) 9365 2465. email:boopa@stamail1.vut.edu.au

Dr A. Boulton:
intermittent streams, hyporheic zones,
Flinders Ranges. Ecosystem Management, University of New England, Armidale, NSW 2351. Phone (067)733760, Fax (067)732 769 email: aboulton@metz.une.edu.au

Dr K.Bowmer:
pesticides - fate and ecological impact, aquatic plan management.
Deputy Vice-Chancellor, Charles Sturt University, PO Box 588, Wagga Wagga, NSW 2678. Phone (069) 332221, Fax (069) 332060. email: kbowmer@csu.edu.au

Dr M. Brock:
temporary wetlands, aquatic plants.
DLWC CNR - Biodiversity and Conservation, PO Box U245, UNE, Armidale, NSW 2351 Phone (067)732 578, Fax (067)733 283 email: mbrock@metz.une.edu.au

Dr S. Bunn:
stream ecology, ecology of riparian zones, biomonitoring.
Faculty of Environmental Sciences, Griffith University, Nathan, Qld 4111. Phone (07)8757 407, Fax (07)875 7459, email: s.bunn@ens.gu.edu.au

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